



# Connecticut Department of Energy and Environmental Protection

Presentation will begin at 10:30 a.m.







**June 15, 2022**

**Walter Tokarz and Rebecca Jascot**

**Bureau of Water Protection and Land Reuse**





# Federal Clean Water Act Simplified

## Section 305 (b) = fishable / swimmable

- Set Goals & Standards for All State Waters in designated uses.
- Monitor, Assess, and Report Conditions Biennially.
- Maintain & Protect “Healthy” Waters.

## Section 303 (d) = Listing/Impaired Waters/Action Plans

- LIST all waters not meeting one or more designated uses.
- Prioritize, TMDL, Implement, Restore Impaired Waters.



**Link to Clean Water Act:**

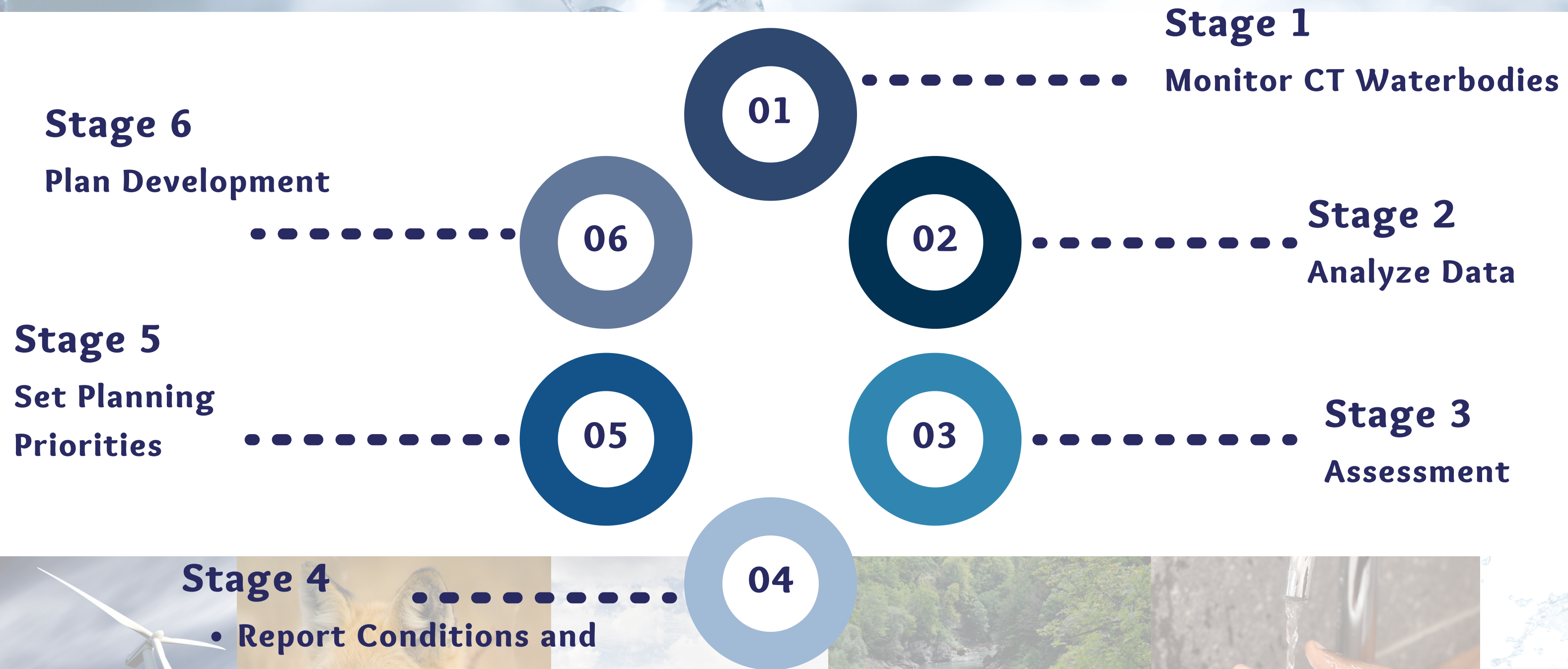
**<https://www.epa.gov/laws-regulations/summary-clean-water-act>**







# IWQR Framework

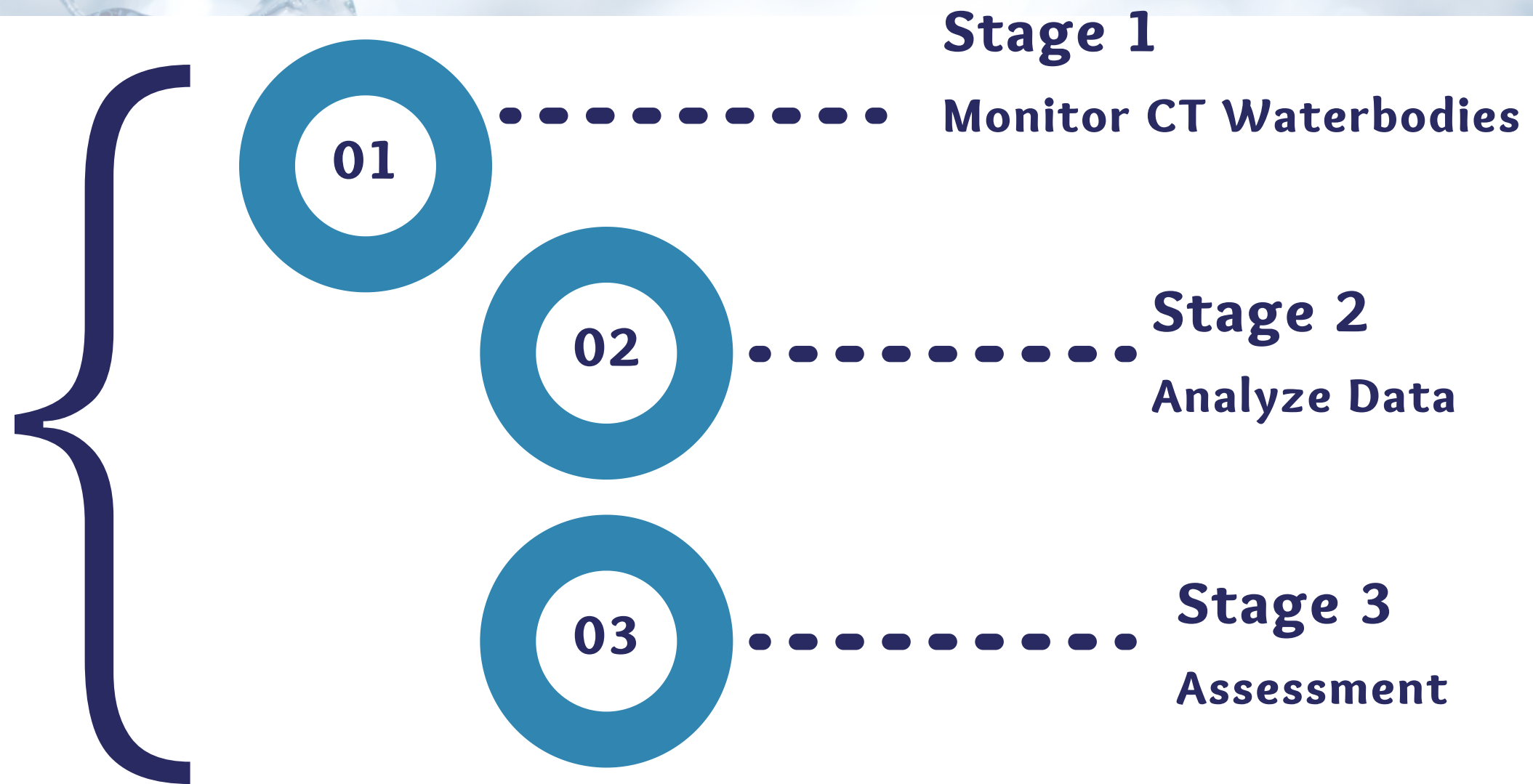






# IWQR Framework

**305 (b)  
All Waters**







# IWQR Framework

## Stage 6

Plan Development

.....

06

## Stage 5

Set Planning  
Priorities

.....

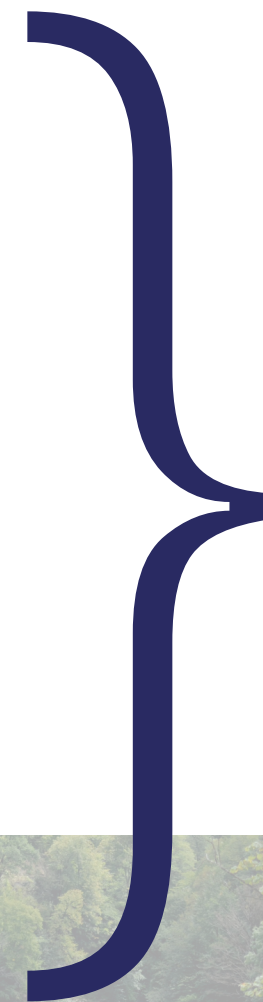
05

## Stage 4

- Report Conditions and List Impairments

.....

04



**303 (d)  
Action Plans to  
Restore and Protect  
Water Quality**

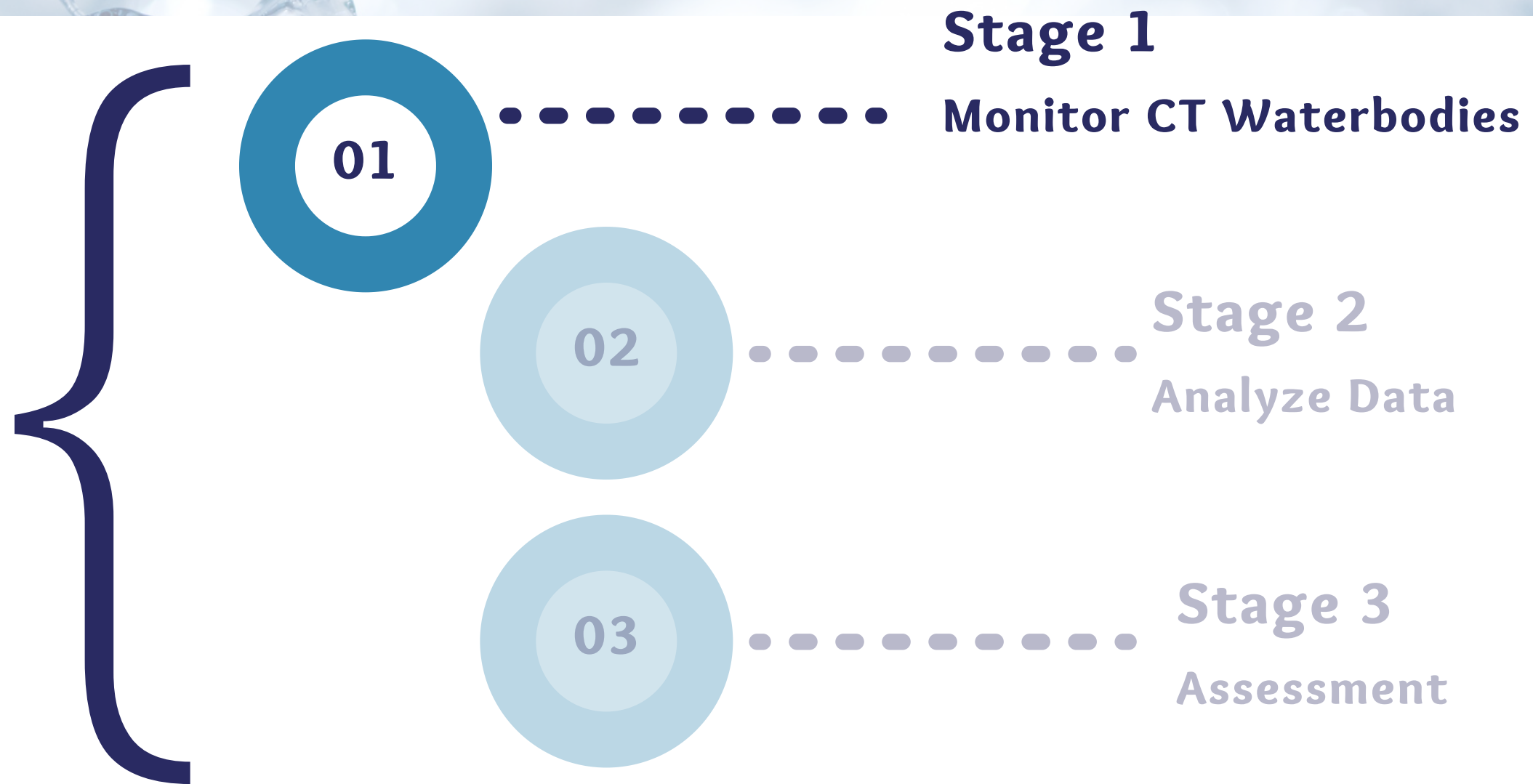






# IWQR Framework

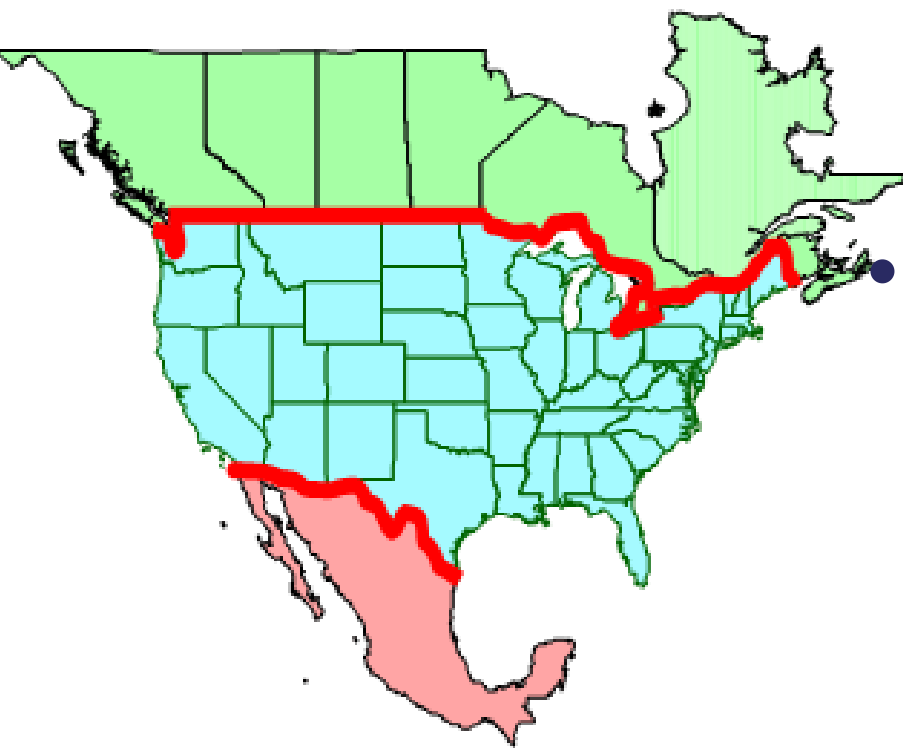
**305 (b)  
All Waters**



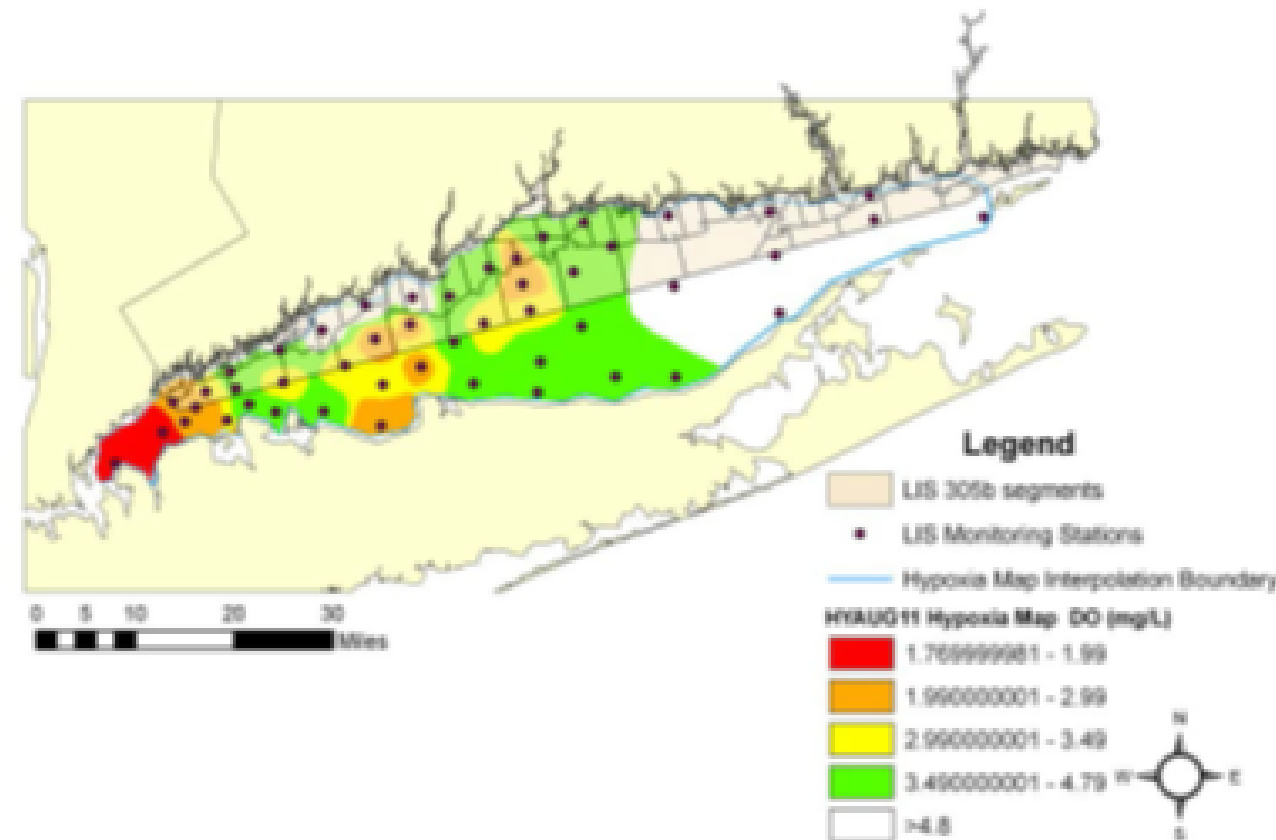


# Stage 1~ Monitor Waters of the State

## Connecticut's Surface Water Resources



- United States Borders with Canada & Mexico ~ 6,000 miles

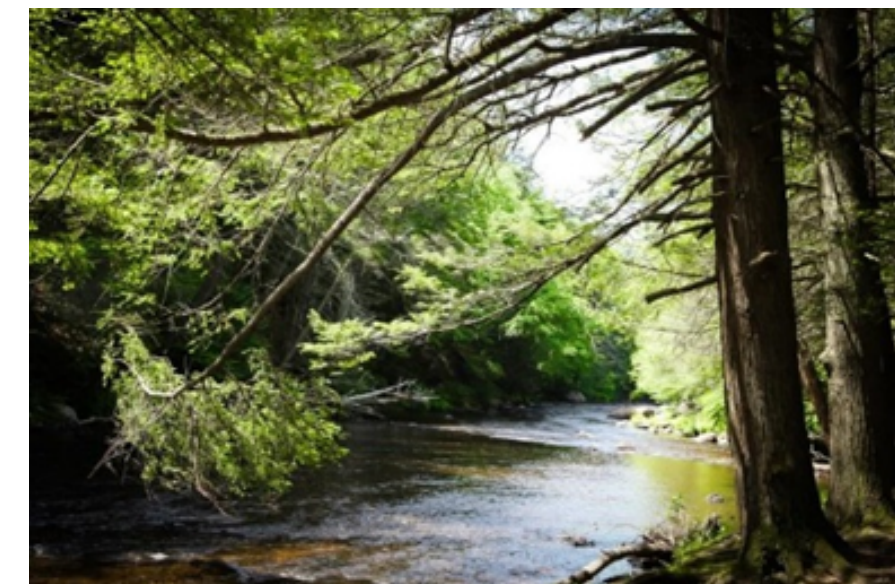


- Estimated 1,320 square miles of Estuary
- Entire Long Island Sound volume = 18 Trillion Gallons

- Estimated 72,509 Acres (3400) Lakes



- Estimated 7,772 miles of Rivers



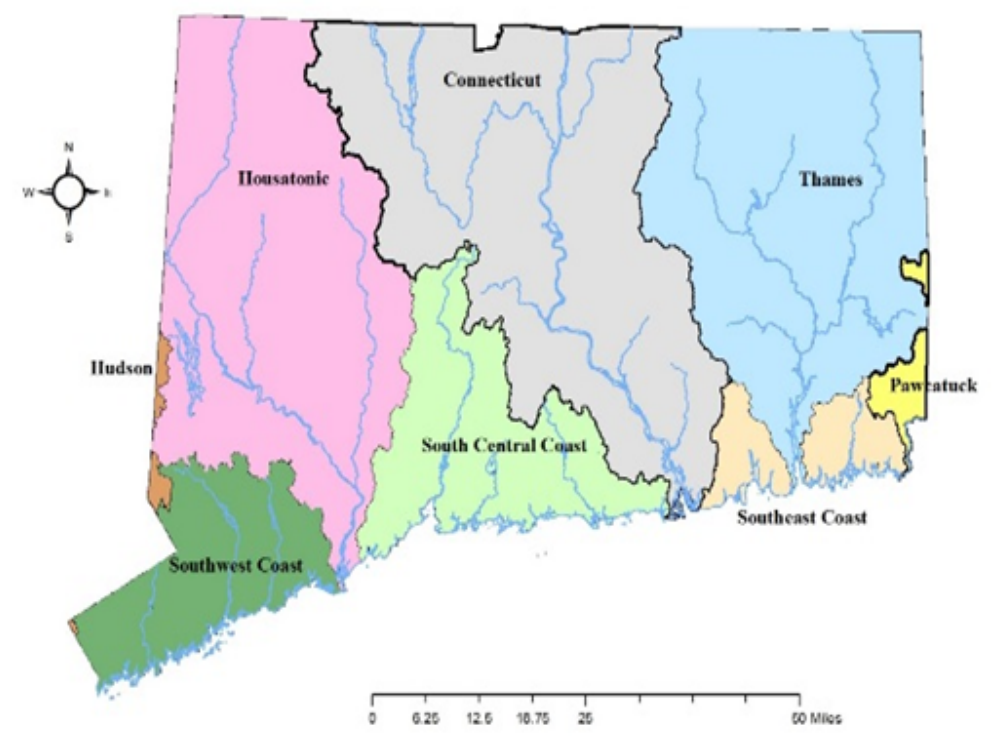
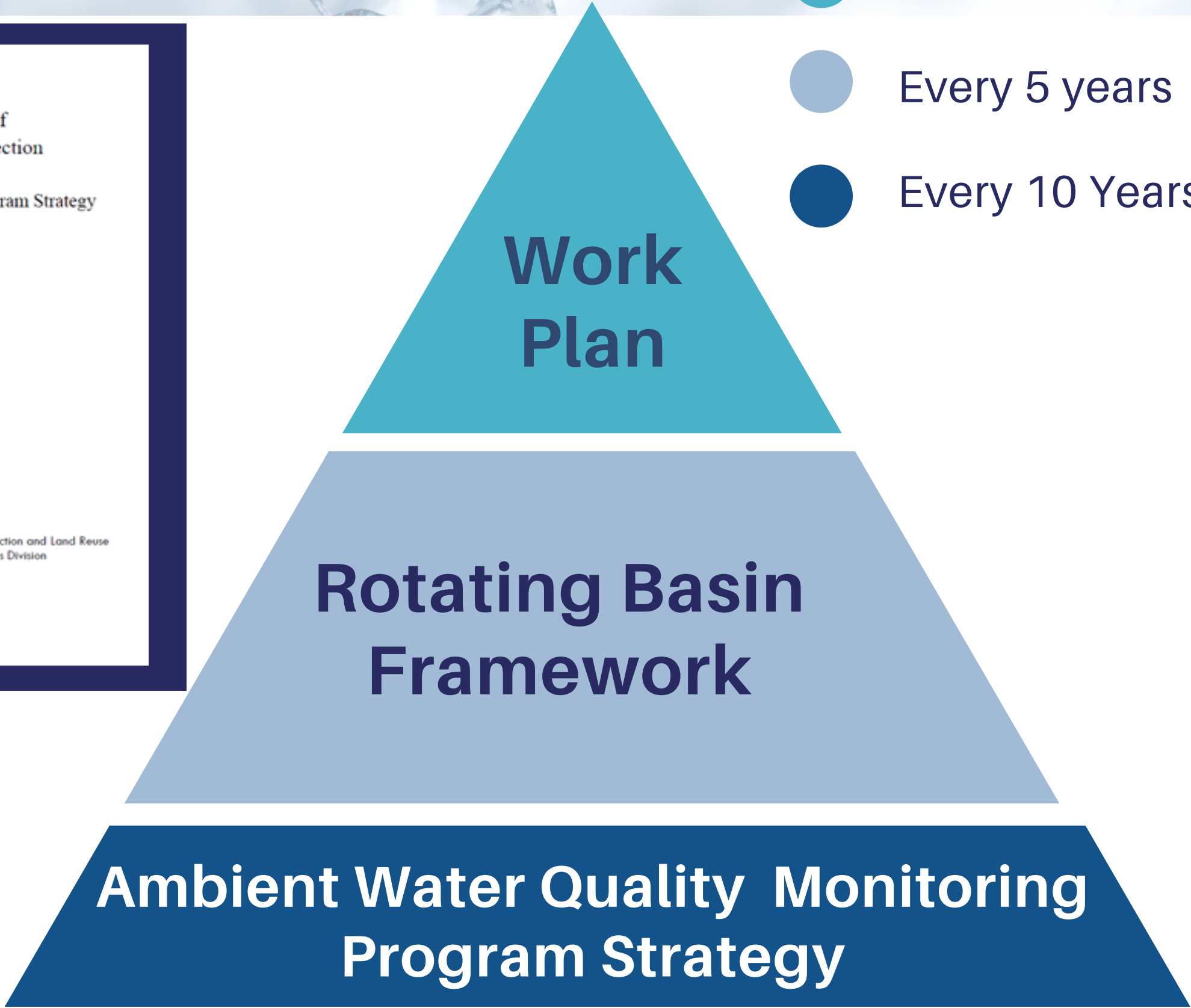
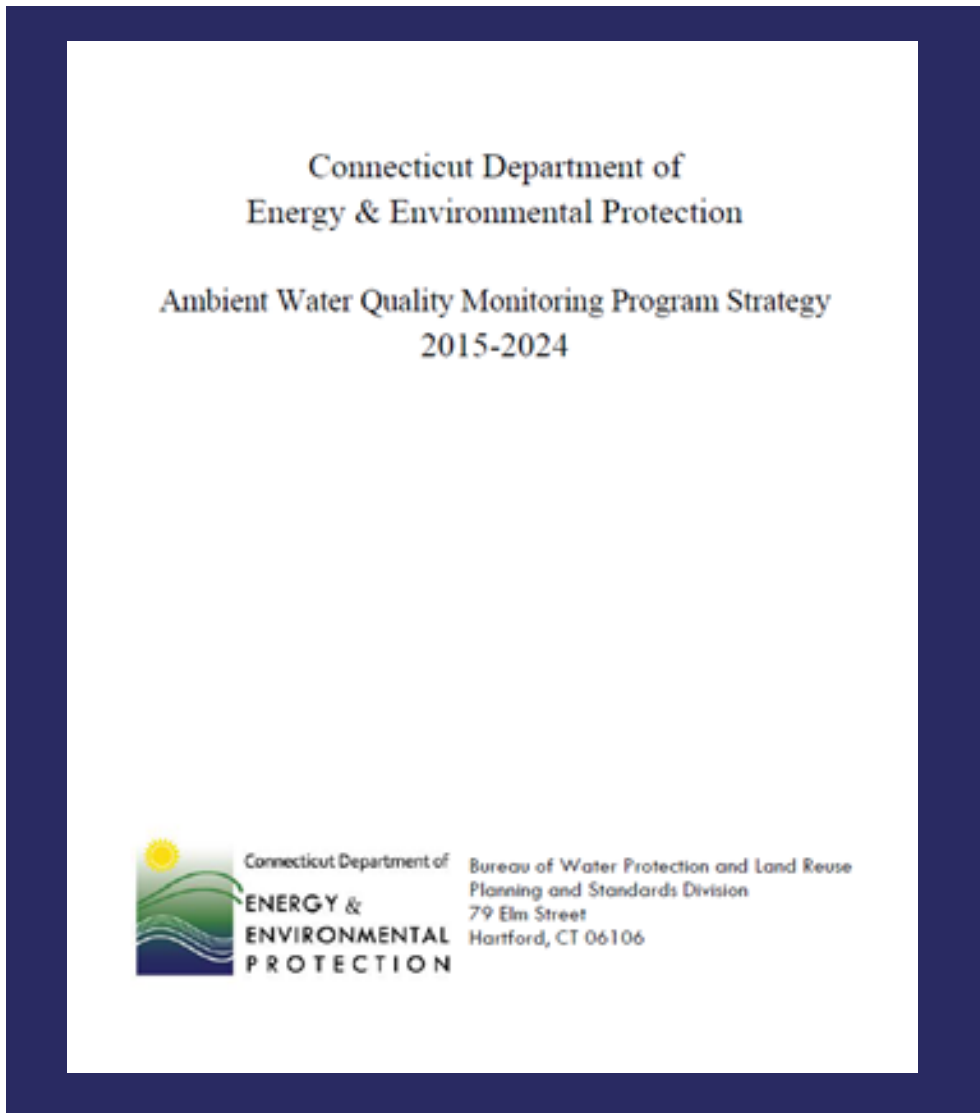


# Stage 1~ Monitor Waters of the State

## Monitoring Planning



- Annual
- Every 5 years
- Every 10 Years



5 year rotation = Statewide



# Stage 1~ Monitor Waters of the State

## Evaluation for Assessments



- Benthic macroinvertebrate and fish communities



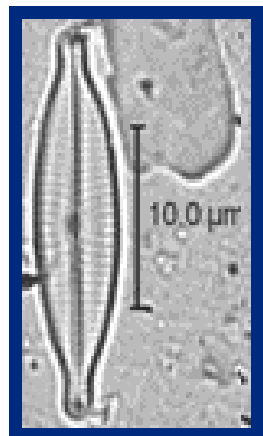
- Indicator bacteria



- Ambient physical / chemical data



- Beach closures / Shellfish bed closures



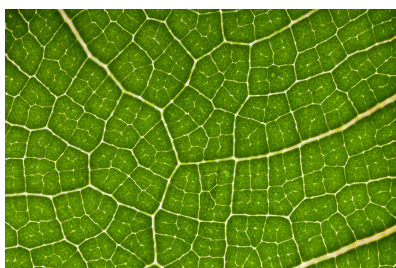
- Periphyton
- Plankton
- Chlorophyll



- Ambient physical / chemical data

### Other lines of evidence:

- Tissue contaminants
- Effluent analysis
- Knowledge of a pollution source (e.g., CSO)



- Aquatic / sediment / Chemical toxicity



# Stage 1~ Monitor Waters of the State

## Sources of Information



- **CT DEEP Monitoring Program**



- **Other CT DEEP Programs**

- Remediation Division
- Enforcement
- Fisheries Division

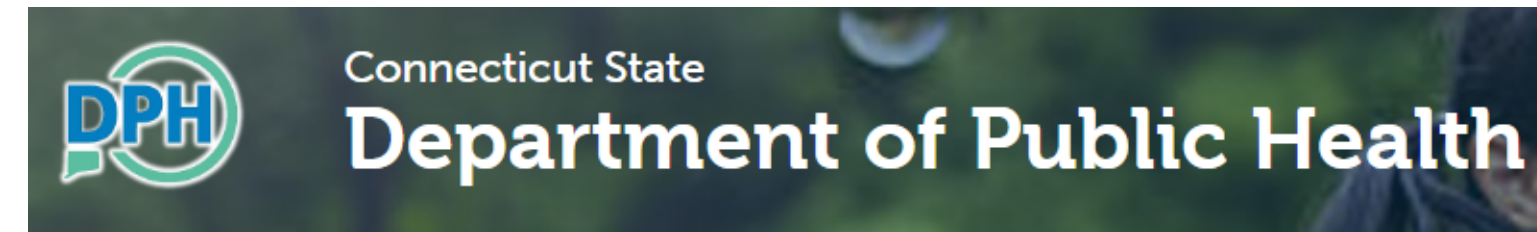
- **Aquatic Plant Surveys**



- **Volunteer Monitoring**



- **Other State, Federal & Municipal Agencies**



U.S. DEPARTMENT OF AGRICULTURE



## Others

- Utilities, consultants, academia
- Permittee self-monitoring



# Stage 1~ Monitor Waters of the State

## Biological Condition Gradient



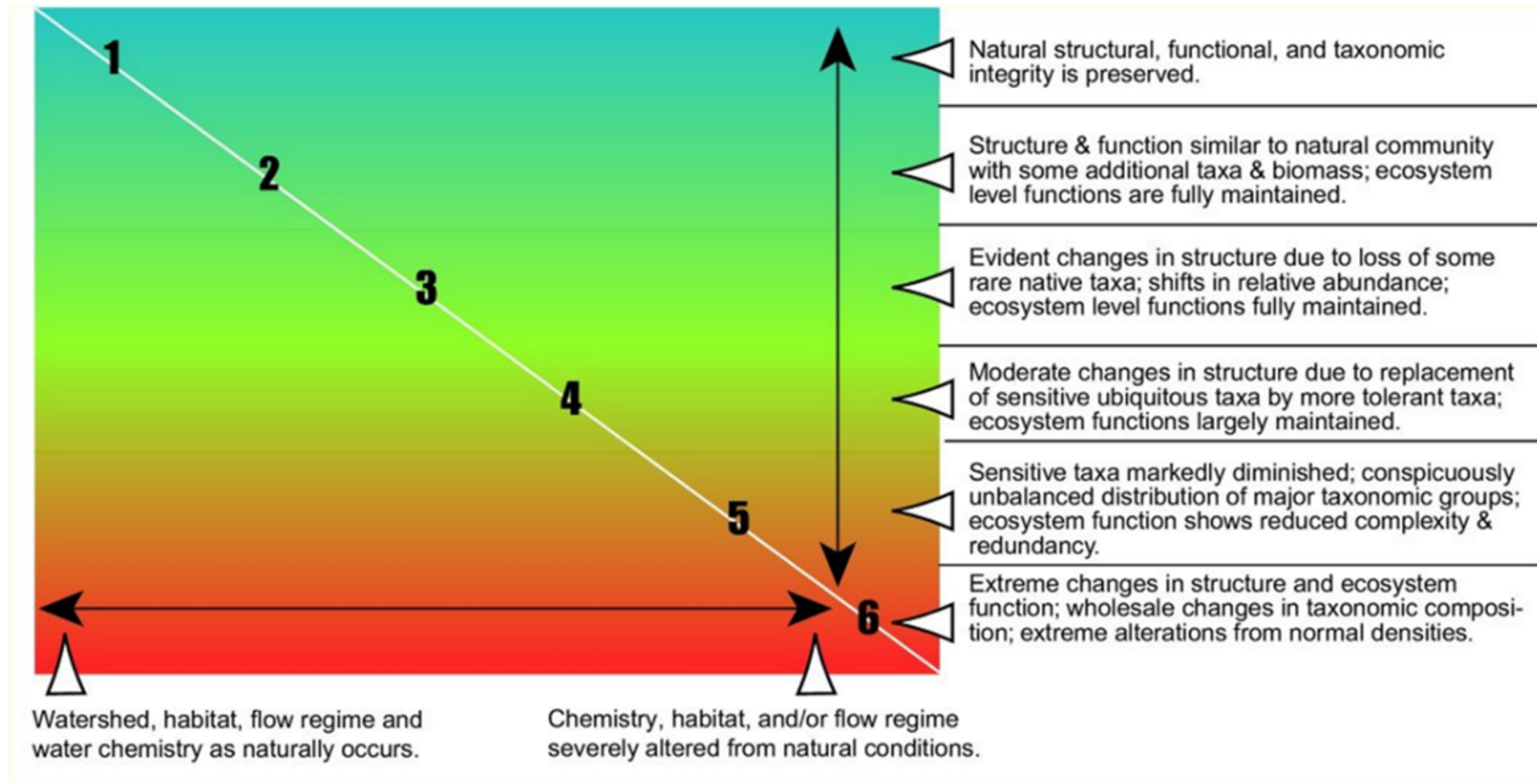
### Biological Integrity

Natural

Fair

Poor

Degraded

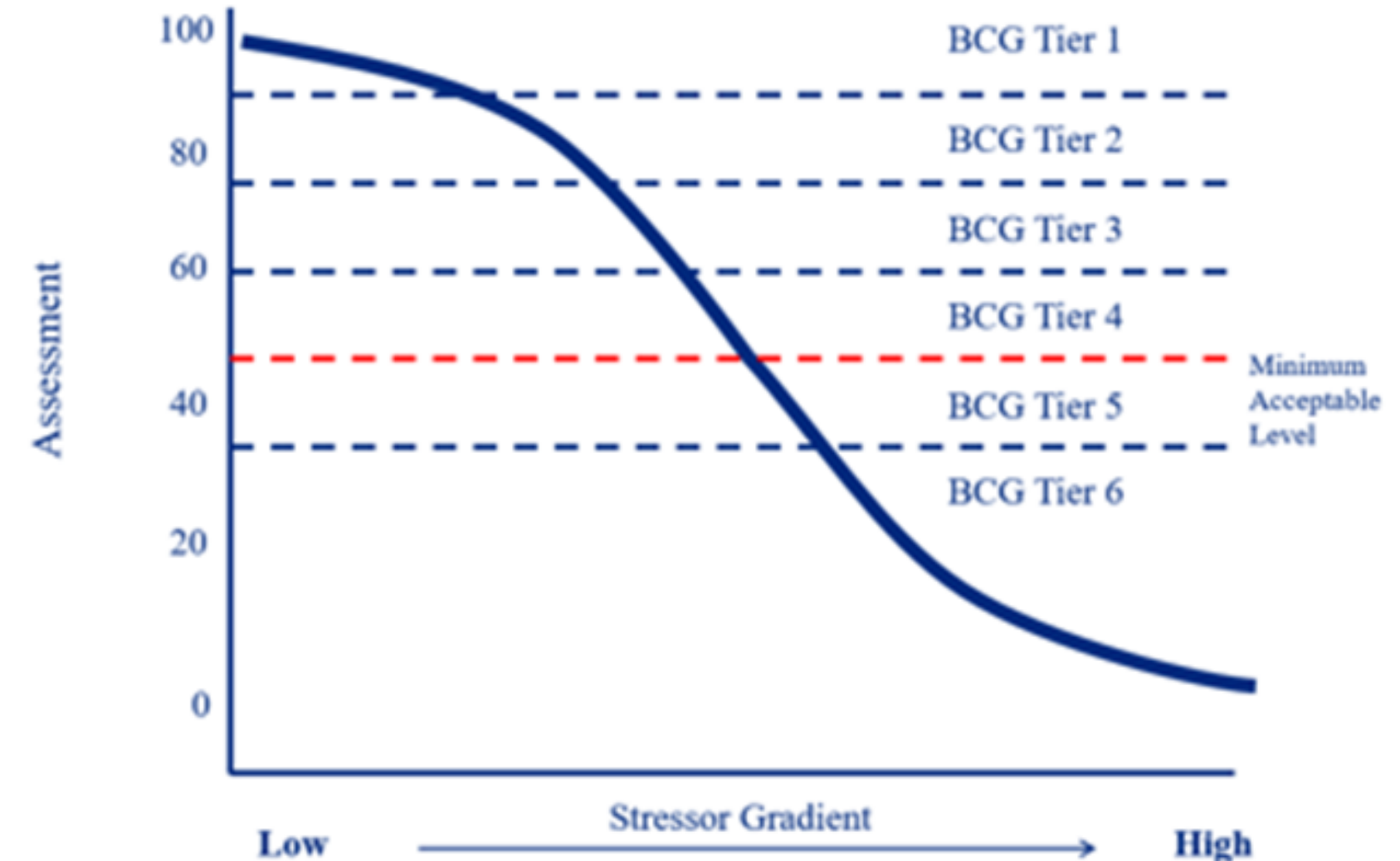
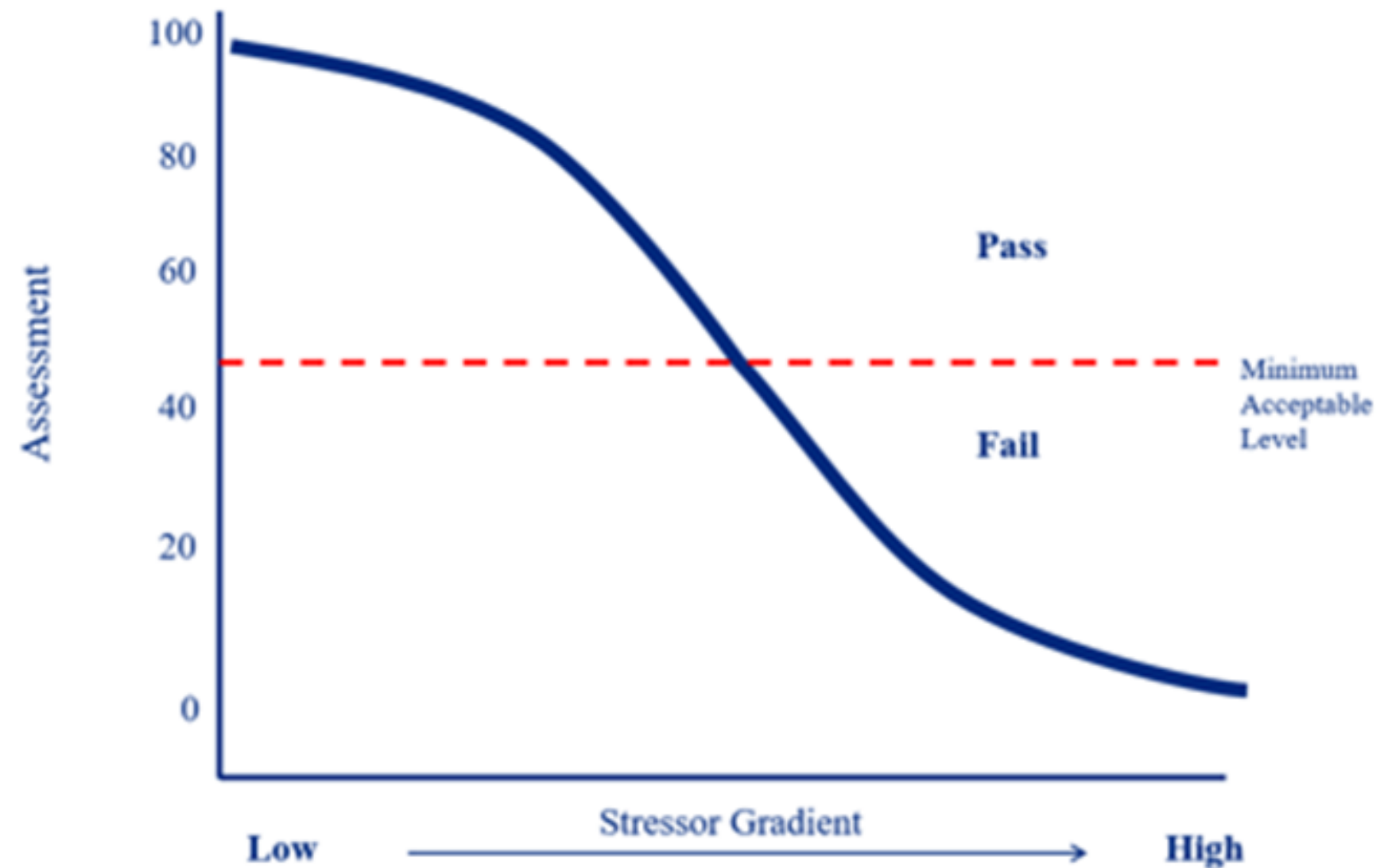


Davies, S.P., and S.K. Jackson, 2006. *Ecological Applications* 16:1251-1266.



# Stage 1~ Monitor Waters of the State

## Biological Condition Gradient



- Draws on previous research in CT and took many years to develop.
- BCG allows us to better identify healthy streams (BCG Tiers 1 and 2).
- BCG allows us to identify streams that are losing ground and hopefully reverse the trend



# Stage 1~ Monitor Waters of the State

## Biological Condition Gradient



### Biological Condition Gradient (BCG) Data 2022 Assessments

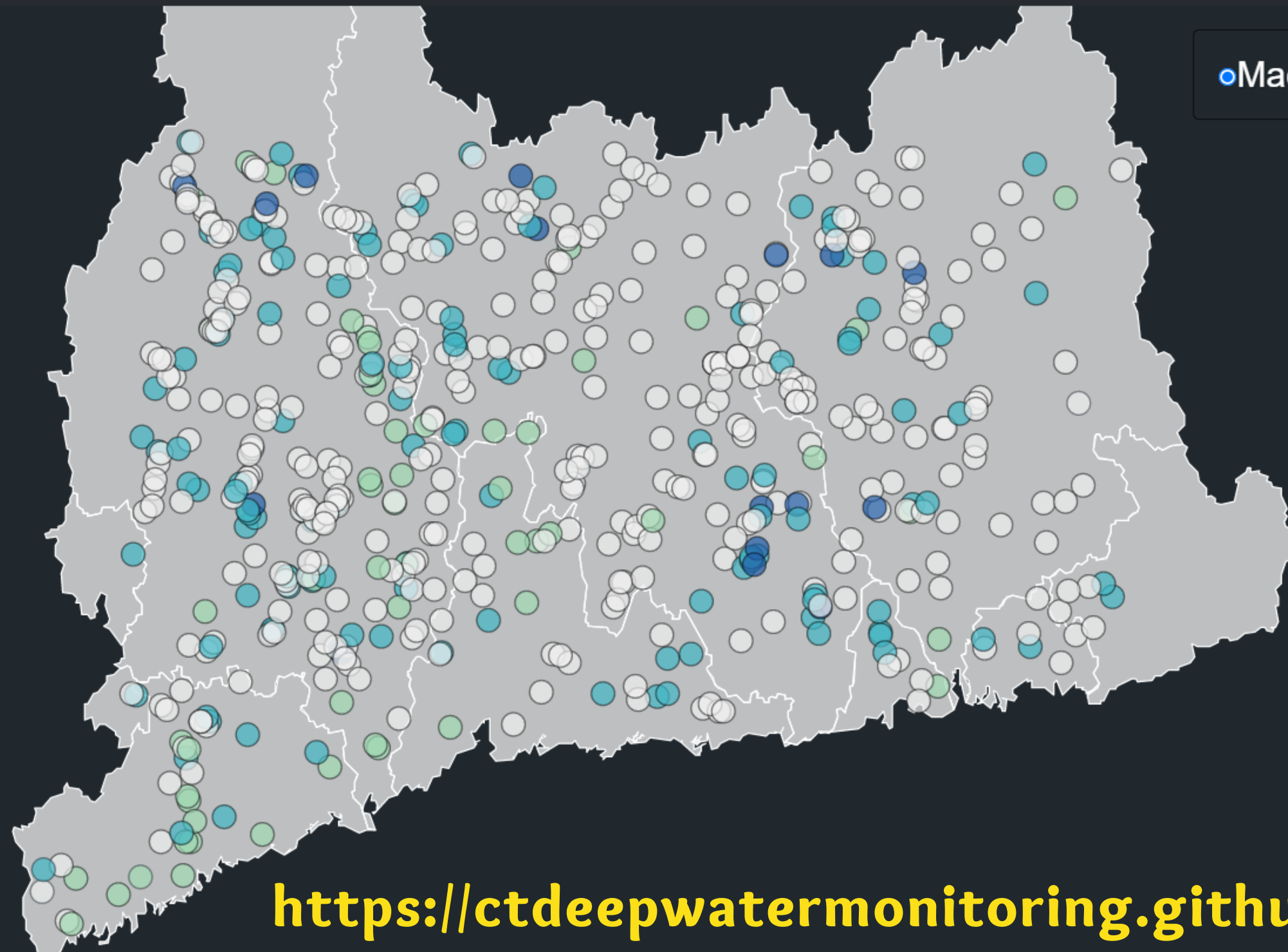
About

#### BCG Value

- 1 to 2 (Low Stress)
- 3 to 4 (Moderate Stress)
- 5 to 6 (High Stress)
- No data for selected taxa

● Macroinvertebrates

● Fish



<https://ctdeepwatermonitoring.github.io/BCGMap/>

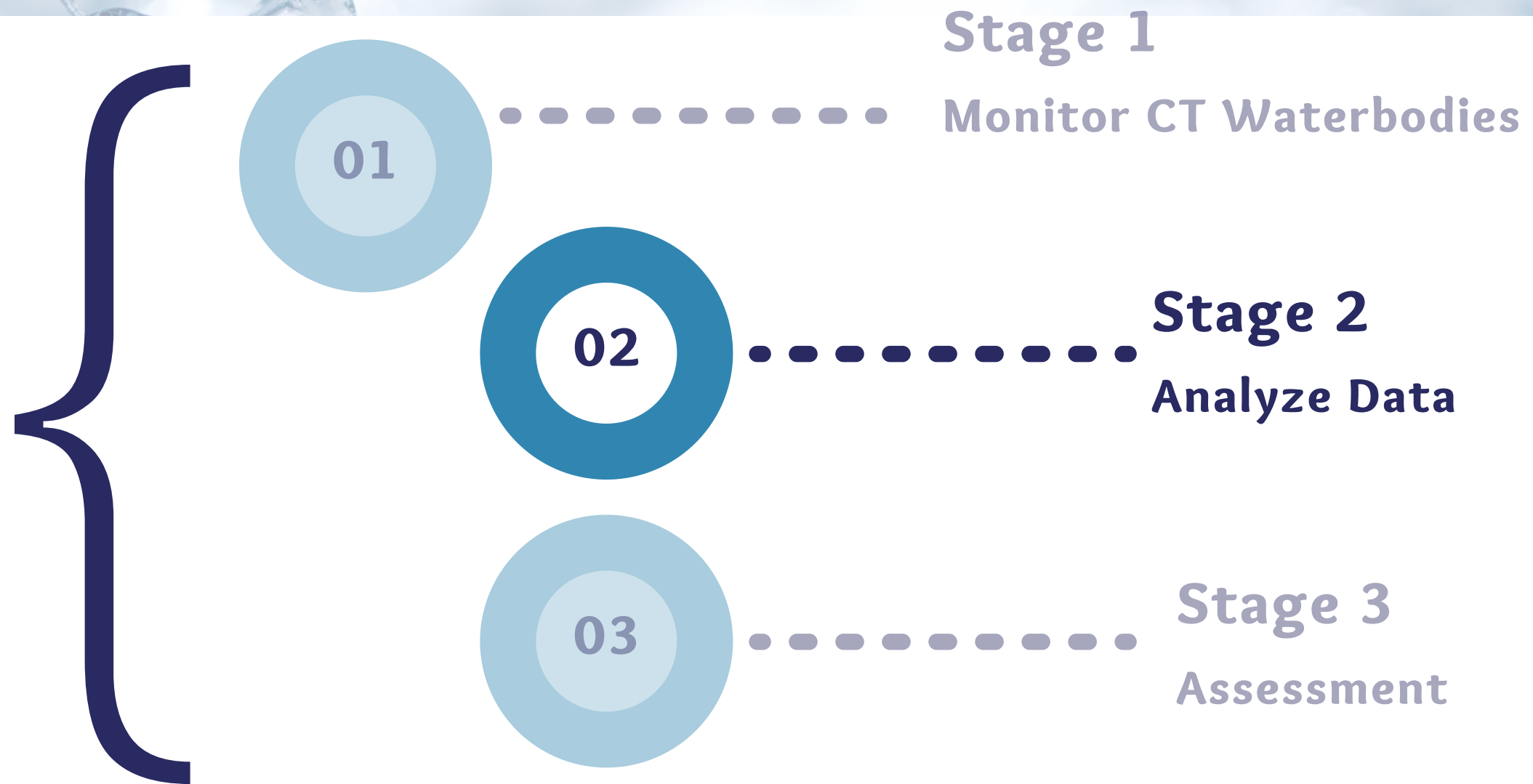






# IWQR Framework

**305 (b)  
All Waters**





# Stage 2 ~ Analyze Data

Assessment Methodology ~ Weight of Evidence



## Evaluate all available data and consider:

- Data quality
- Age
- Frequency
- Site conditions

## Compare data to Water Quality Standards:



Water Quality Standards are met = Full Support (Healthy)



Water Quality Standards NOT met = Not Supporting (Impaired)



Insufficient/No New Data = Not Assessed

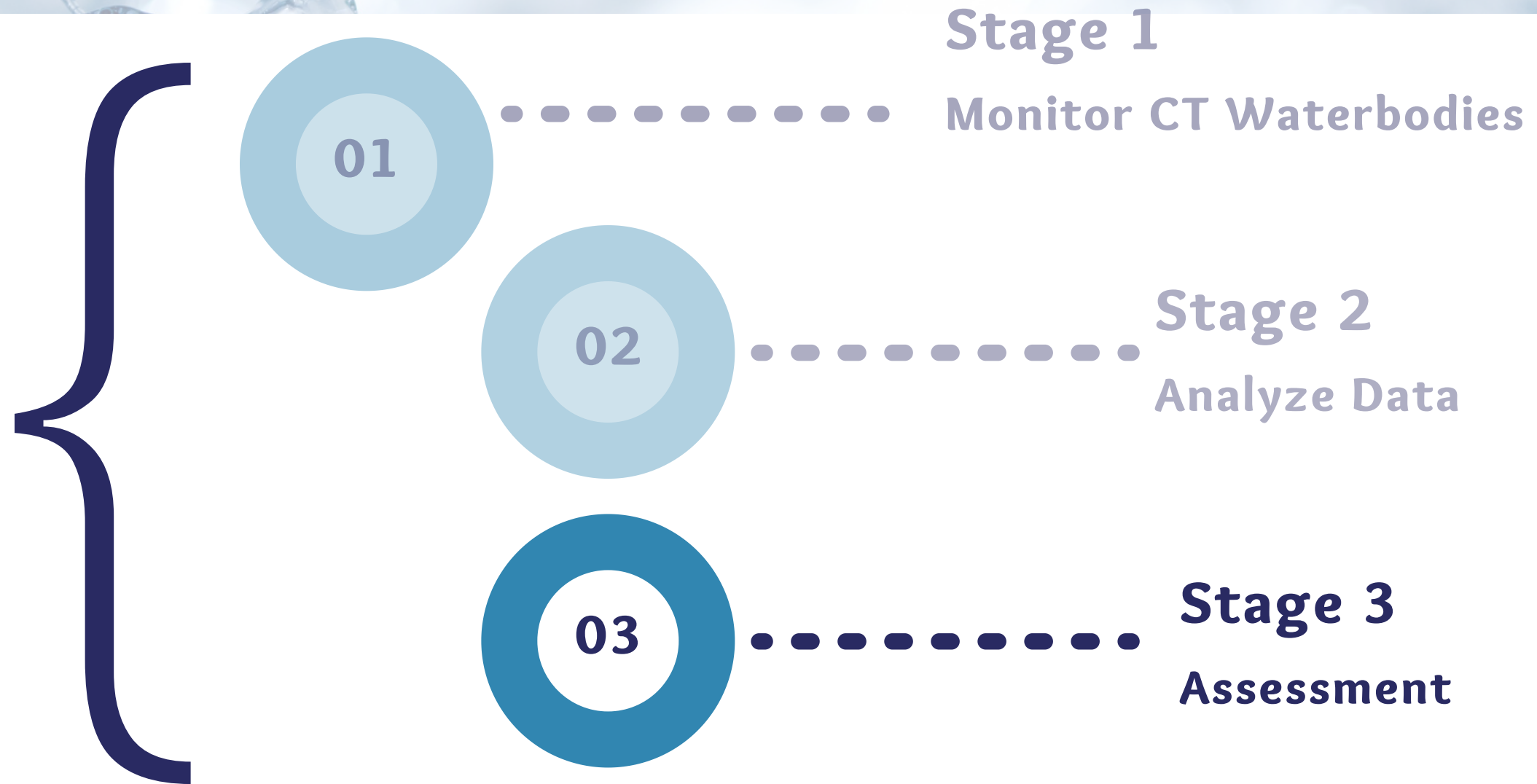






# IWQR Framework

**305 (b)  
All Waters**





# Stage 3 ~ Assessment

## Designated Uses



### Aquatic Life and Wild life



### Public Water Supply



### Industrial Supply



### Shellfishing



### Recreation



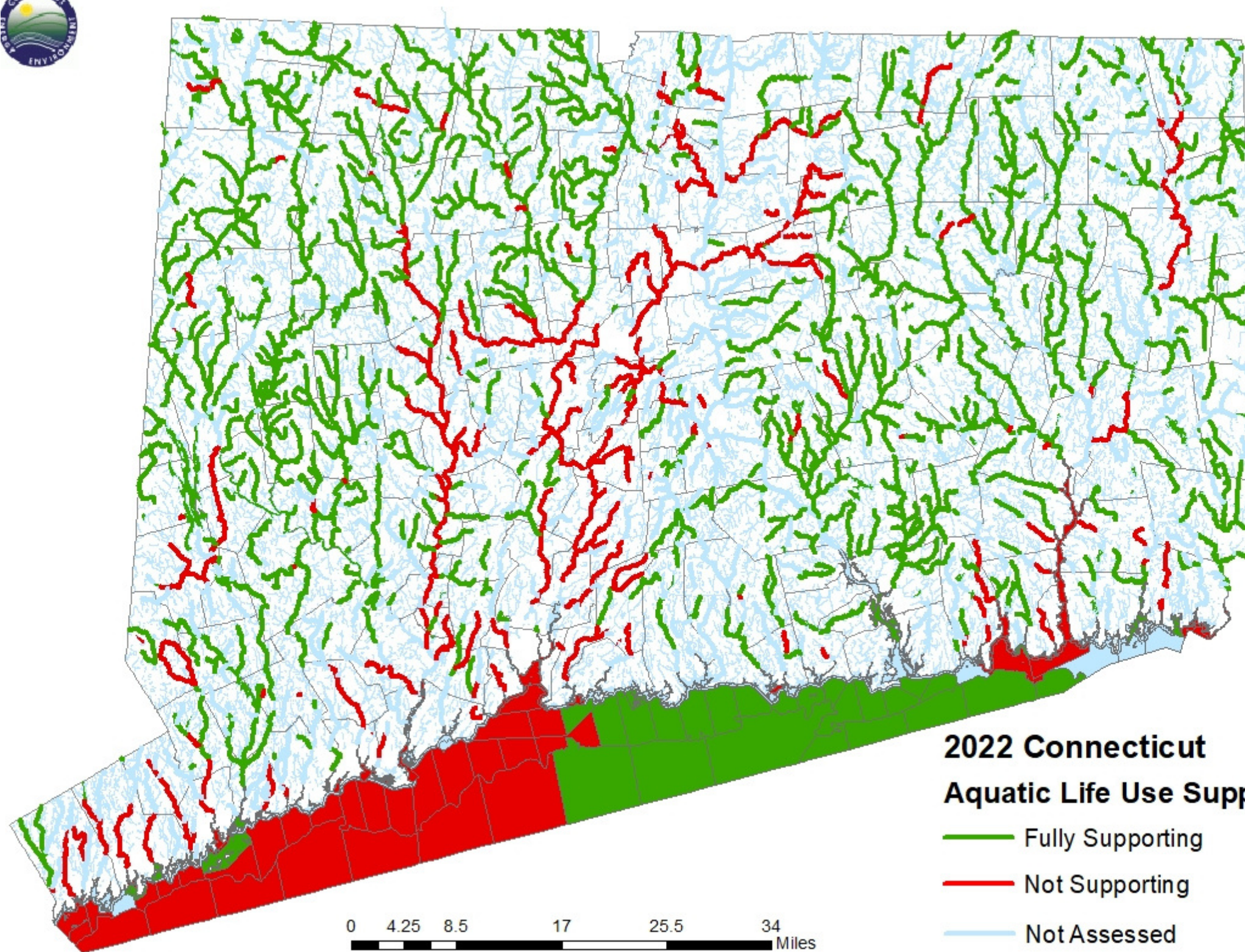
### Agriculture Supply





# Stage 3 ~ Assessment

## Aquatic Life



**2022 Connecticut  
Aquatic Life Use Support**

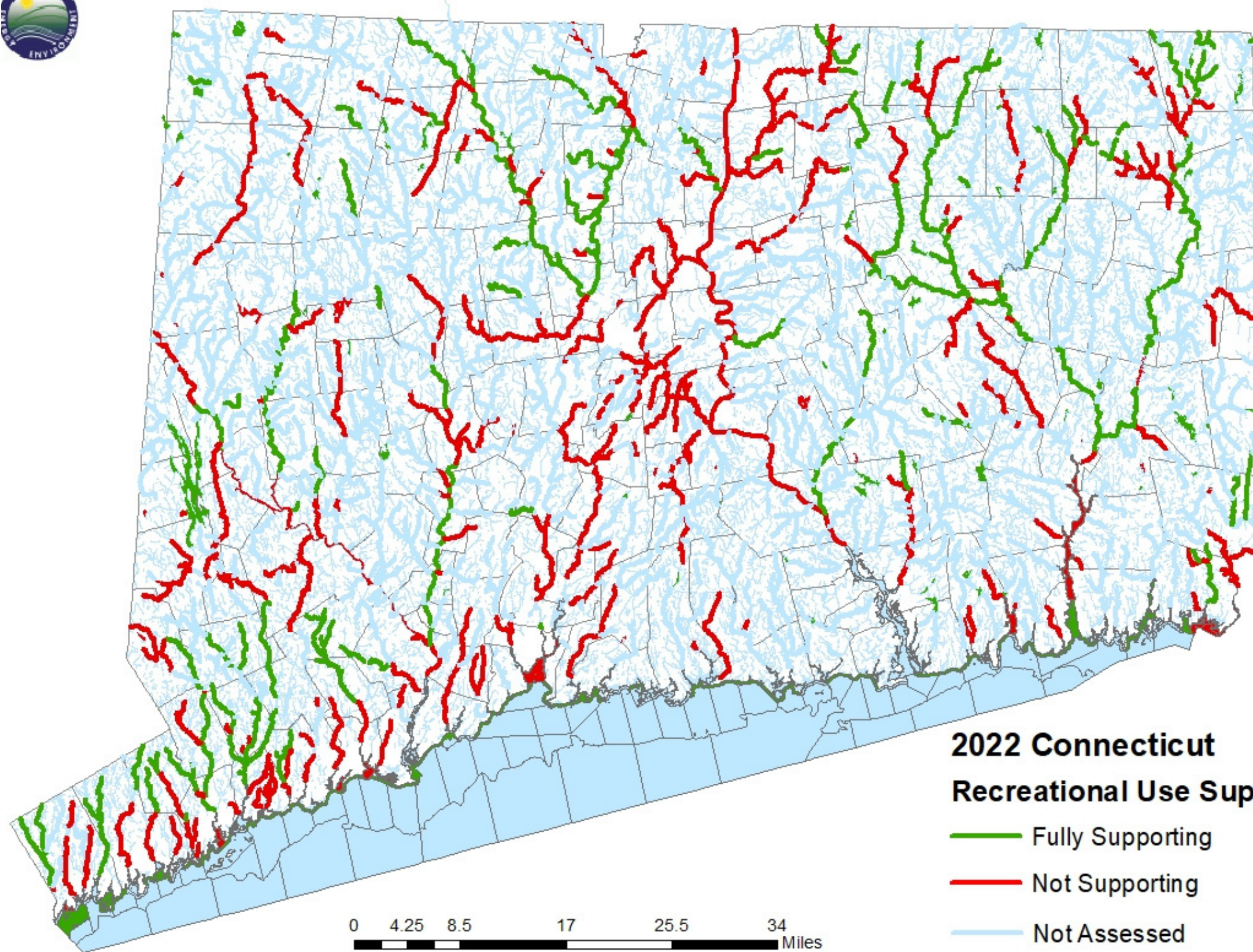
- Fully Supporting
- Not Supporting
- Not Assessed





# Stage 3 ~ Assessment

## Recreation



- 2022 Connecticut  
Recreational Use Support**
- Fully Supporting
  - Not Supporting
  - Not Assessed

0 4.25 8.5 17 25.5 34 Miles





# IWQR Framework

## Stage 6

Plan Development

.....

06

## Stage 5

Set Planning  
Priorities

.....

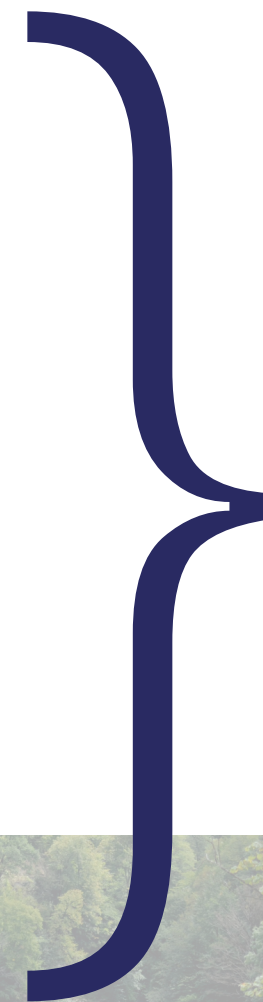
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## Stage 4

- Report Conditions and Listing

.....

04



**303 (d)**

**Action Plans to  
Restore and Protect  
Water Quality**



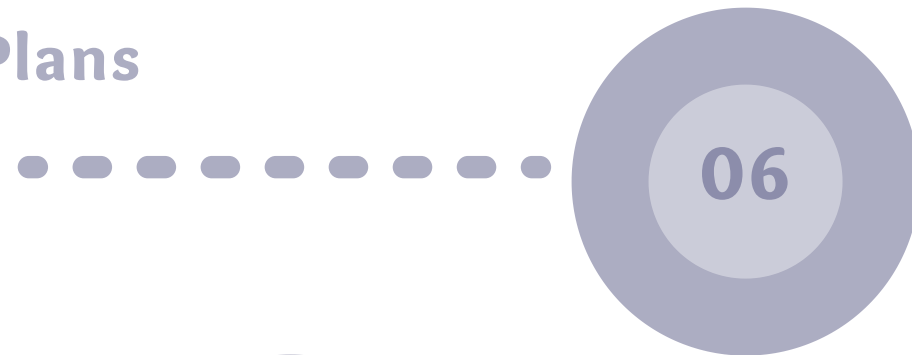




# IWQR Framework

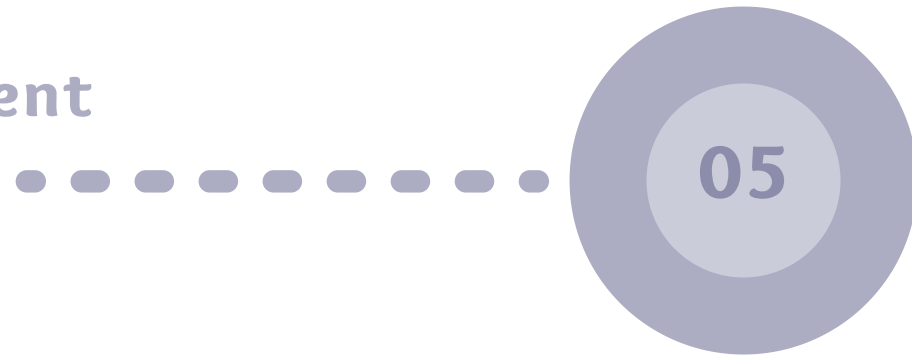
Stage 6

Implement Plans



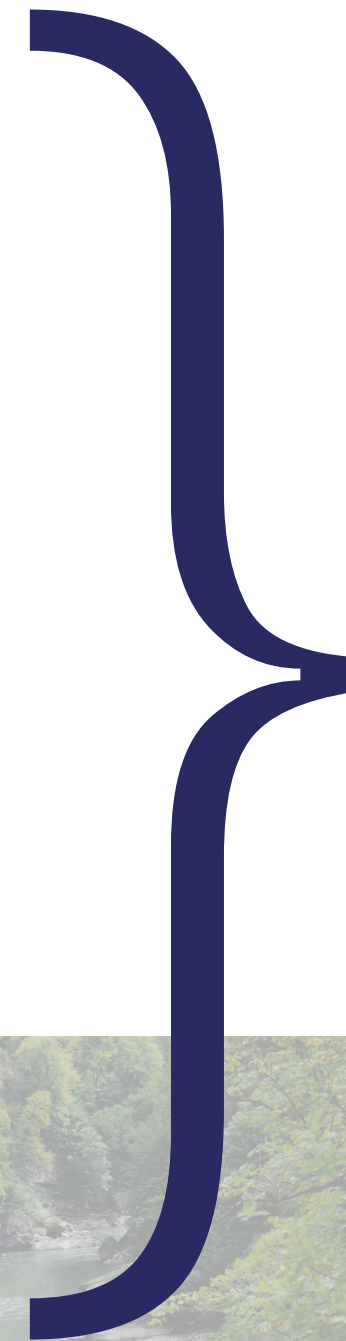
Stage 5

Set Management  
Priorities



Stage 4

- Report Conditions and Listing



**303 (d)  
Action Plans to  
Restore and  
Protect Water  
Quality**





# Stage 4 ~ Report Conditions and Listing

## EPA Categories 1-3

### **CATEGORY 1**

The waterbody is meeting all designated uses.

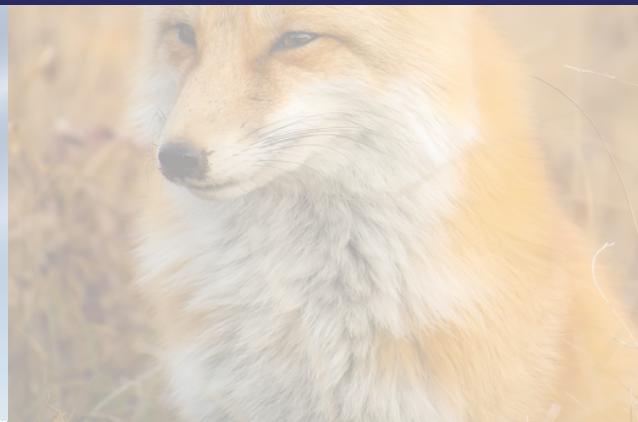
### **CATEGORY 2**

The waterbody is meeting some not all designated uses.

### **CATEGORY 3**

There is Insufficient information to determine if any designated uses are met.

- Five category approach developed by the US EPA and amended by Connecticut
- Tracking attainment of water quality goals for each waterbody.
- Categories 1-3 are used for waters that are meeting some or all of the designated uses or insufficient information is available to allow for an assessment.





# Stage 4 ~ Report Conditions and List Impairments

## EPA Categories 4 and 5 (Impaired Waters) "The List"

### CATEGORY 4

The waterbody is Impaired/threatened, but has a plan in place. Waterbodies impaired for one or more designated uses that have an established TMDL and where a pollutant has been identified as the cause of the impairment.

4a-Standards not met, TMDL in place

4b-Other management measure (legal course of action)  
Waterbodies impaired for one or more designated uses by a pollutant that is being addressed by pollution control requirements other than a TMDL which are expected to address the impairment.

4c-Standards not met, waterbodies impaired for one or more designated uses which is the result of pollution but is not caused by a pollutant (flow impairments no legal course of action).

### CATEGORY 5

Data and/or information indicate that one or more designated uses are not being supported (not meeting Water Quality Standards). A TMDL or action plan is needed. Anytime a waterbody moves out of category 5 it is considered to be delisted.

Standards not met, Restoration Plan is needed for the waterbody to meet WQS





# Stage 4 ~ Report Conditions and Listing

## **NEW** Connecticut Sub-categories

**\*\*The addition of the sub-categories will allow for better tracking of the attainment status of those waterbodies that have a restoration or protection plan associated with it.\*\***

- **Water quality status changes because;**
  - New water quality data become available indicating that the waterbody is meeting WQS for a designated use.
  - A Water Quality Action Plan is developed (such as a TMDL).
  - Data becomes out of date or insufficient to determine if a waterbody is meeting WQS.

**CT Sub-categories = EPA category (categories 1-5) + plan that has been developed for restoration or protection associated with the waterbody.**

**Note: If a segment becomes impaired that is associated with protection plan that segment will require a TMDL and move back to category 5.**







# Stage 4 ~ Report Conditions and List Impairments

EPA Categories 1-5 and **NEW** Connecticut Sub-categories

## EPA Category

## CT Sub-Category

### CATEGORY 1

The waterbody is meeting all designated uses.

- 1TMDL- Standards met, TMDL in place
- 1R-Standards met, Restoration Plan in place
- 1P\*-Standards met, Protection Plan in place

### CATEGORY 2

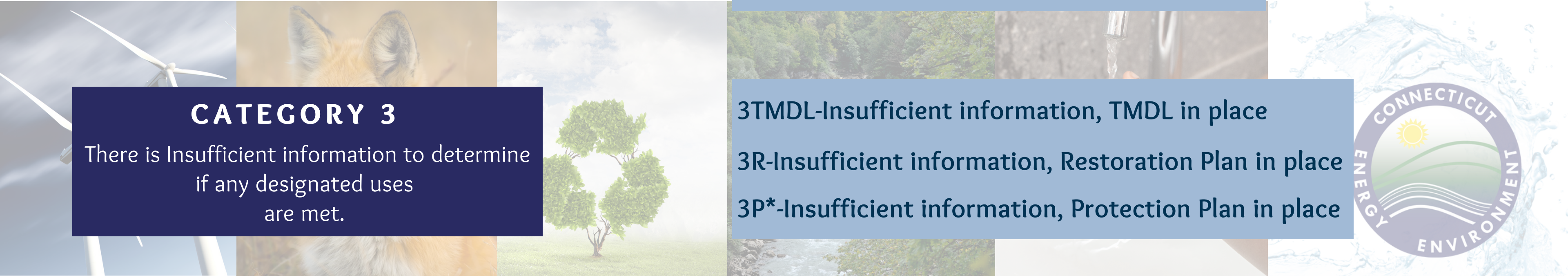
The waterbody is meeting some not all designated uses.

- 2TMDL-Standards met, TMDL in place
- 2R-Standards met, Restoration Plan in place
- 2P\*-Standards met, Protection Plan in place

### CATEGORY 3

There is Insufficient information to determine if any designated uses are met.

- 3TMDL-Insufficient information, TMDL in place
- 3R-Insufficient information, Restoration Plan in place
- 3P\*-Insufficient information, Protection Plan in place





# Stage 4 ~ Report Conditions and Listing

EPA Categories 1-5 and **NEW** CT Sub-categories

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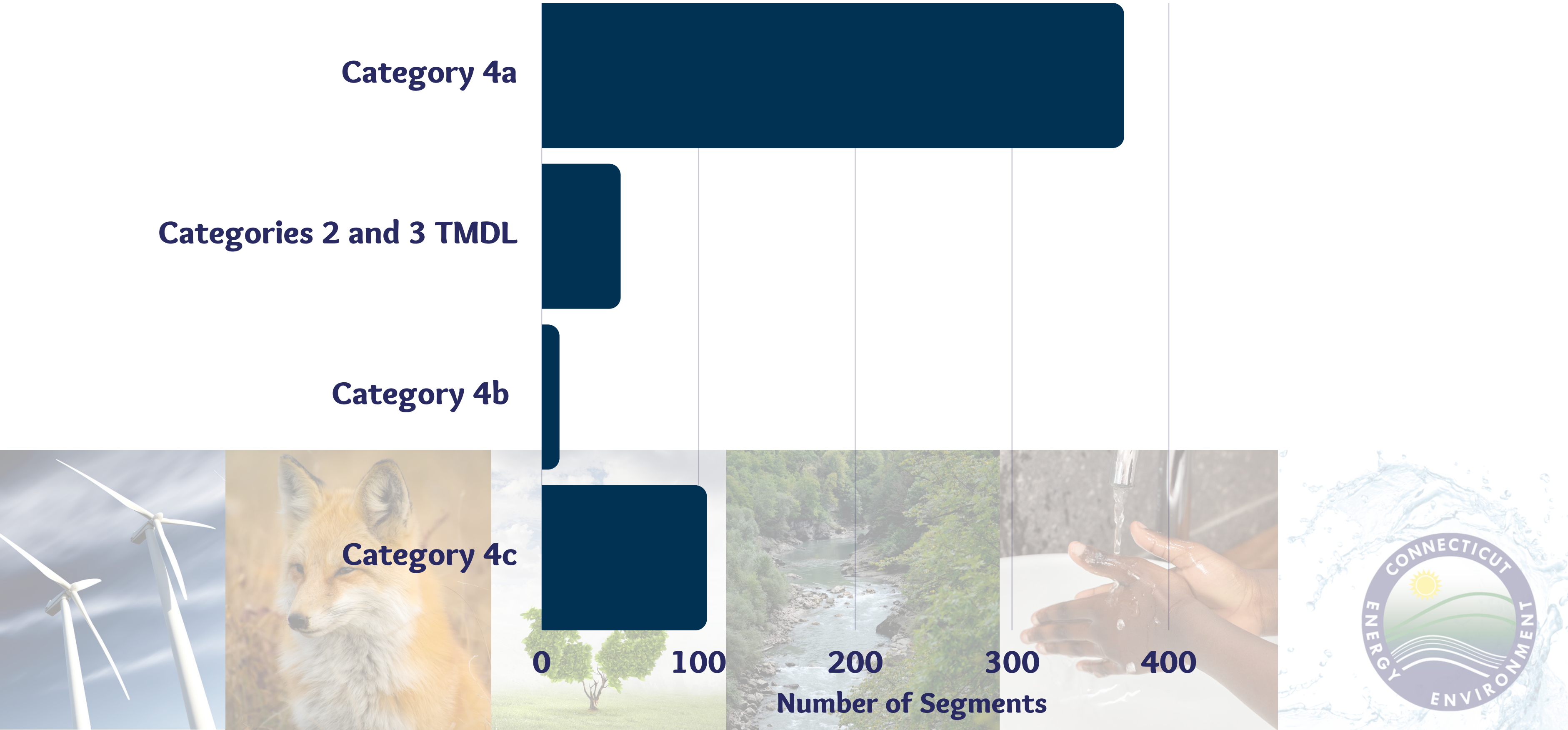
5R-Standards not met, Restoration Alternative Plan is in place





# Stage 4 ~ Report Conditions and Listing

Category 4 and Connecticut Sub-Categories

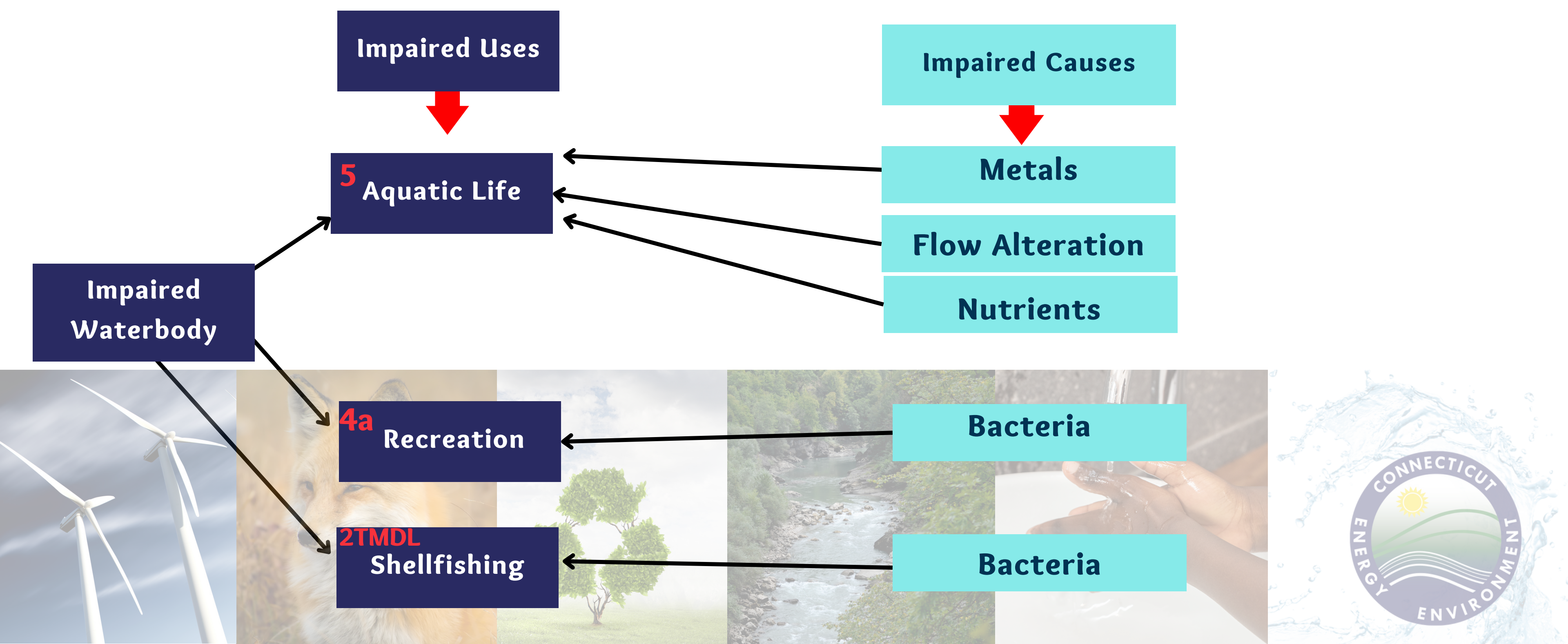




# Stage 4 ~ Report Conditions and Listing

EPA Categories 1-5 and CT Sub-categories

One waterbody can have several impairments for one or more designated use.





# Stage 4 ~ Report Conditions and Listing

EPA Categories 4 and 5 (Impaired Waters) "The List"

2022 Impairments by Designated Use - IWQR Appendix B-1

Commercial Shellfish Harvesting Where Authorized

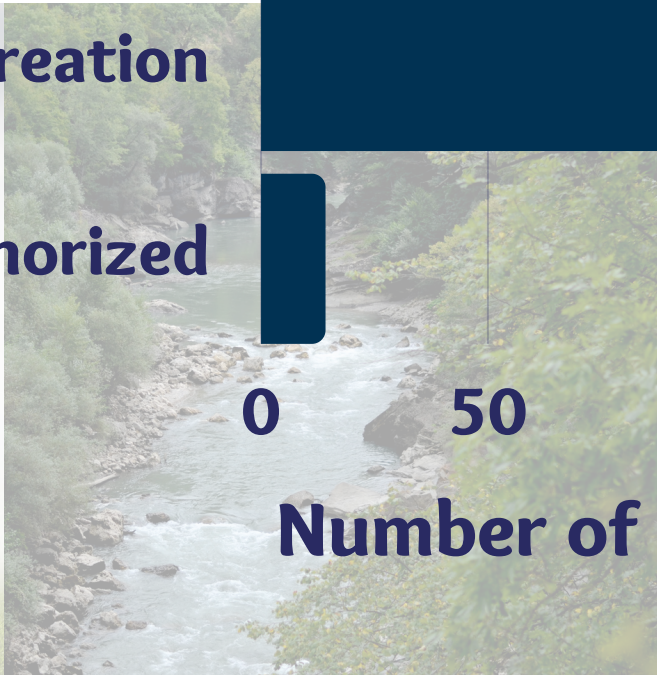
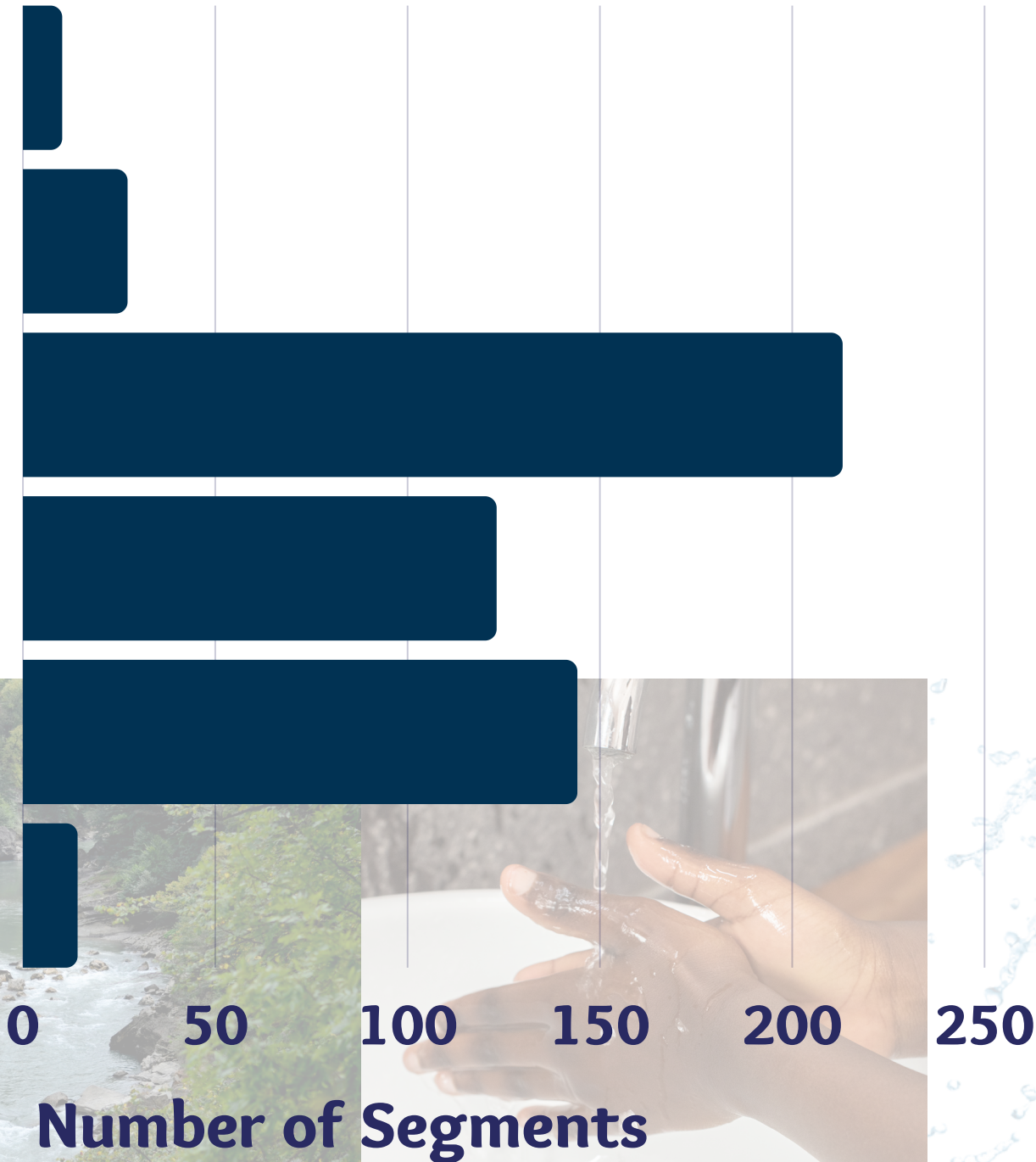
Fish Consumption

Habitat for Fish, Other Aquatic Life and Wildlife

Habitat for Marine Fish, Other Aquatic Life and Wildlife

Recreation

Shellfish Harvesting for Direct Consumption Where Authorized







# IWQR Framework

**Stage 6**

Plan Development



06

**Stage 5**

Set Planning  
Priorities



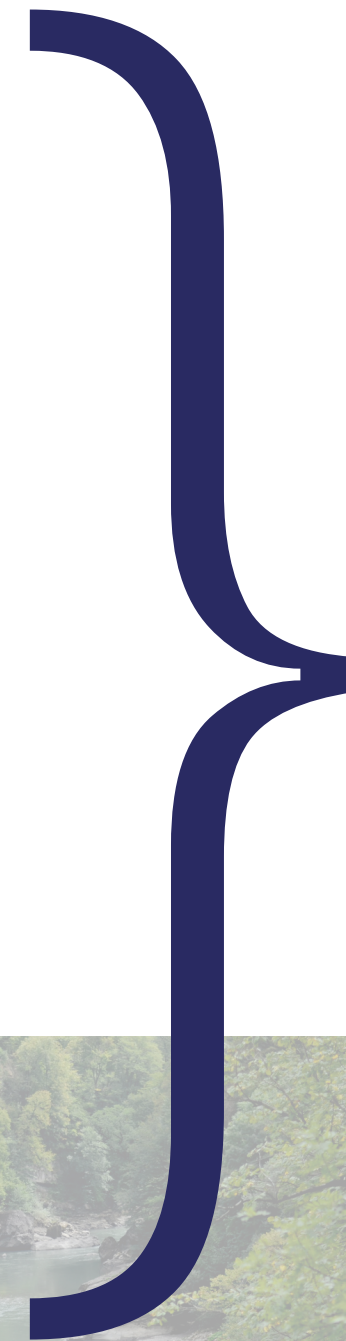
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**Stage 4**

- Report Conditions and List Impairments



04



**303 (d)  
Impaired Waters**



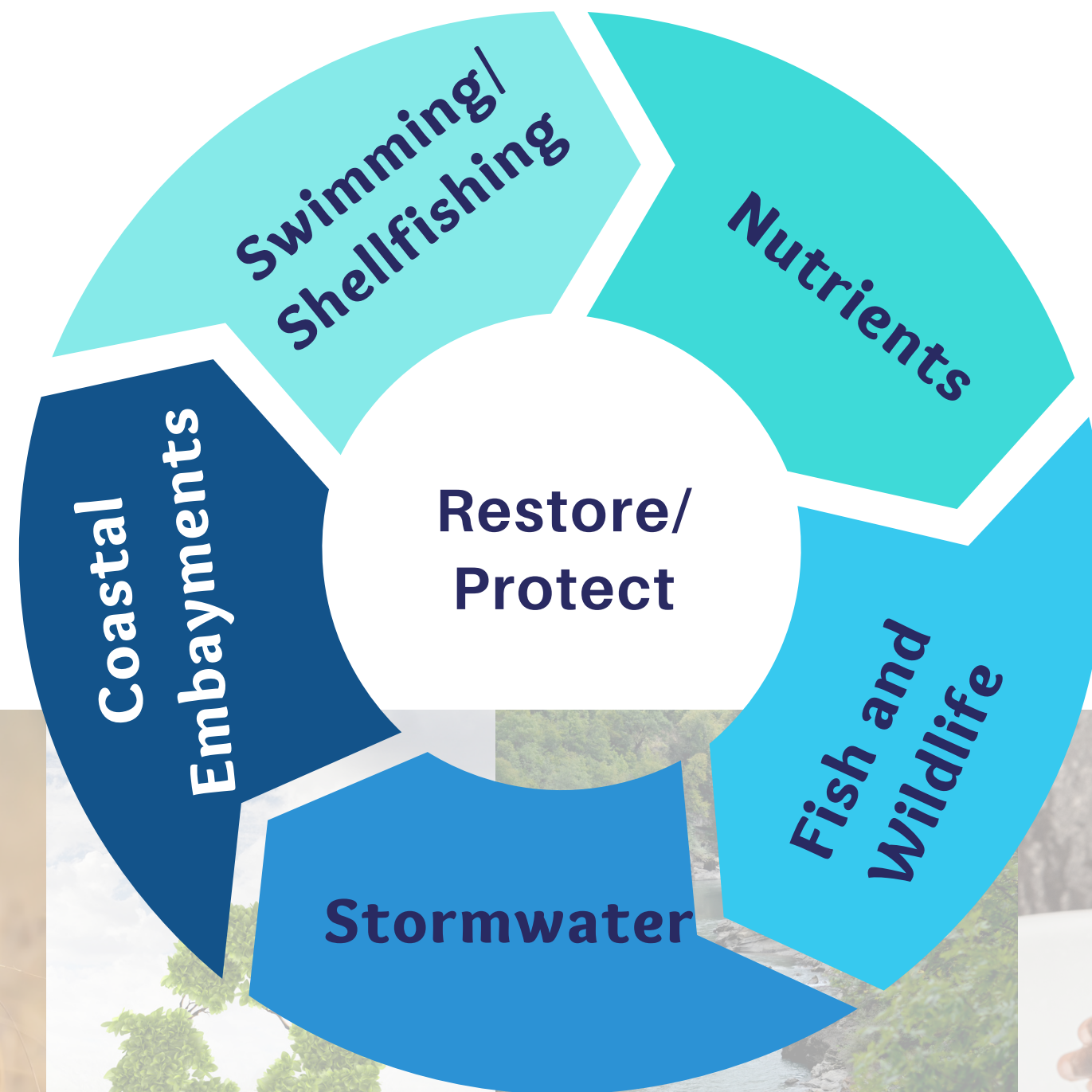


# Stage 5 ~ Set Planning Priorities

Water Quality Plans ~ Restoring and Protecting CT Waterbodies

## Integrated Water Resource Management

- Assign the correct plan of action (not just TMDLs) to restore/protect CT waterbodies.
- TMDL, Restoration Plan or a Protection Plan



## Waterbodies are selected for plan development based on;

- Assessment information
- Feedback from public
- Federal requirements
- Stakeholder Involvement

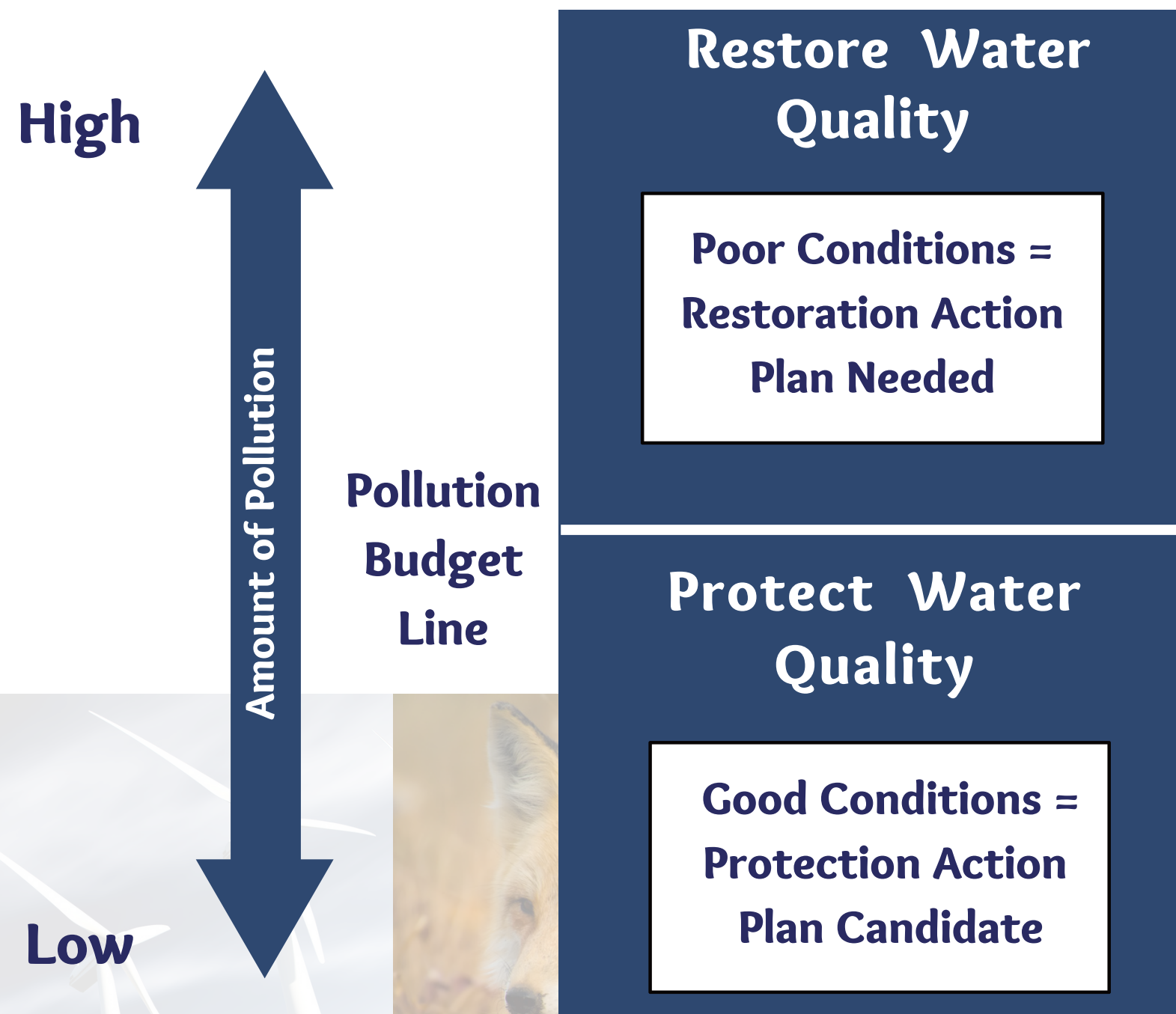




# Stage 5 ~ Set Planning Priorities

## Types of Water Quality Plans Restoration & Protection

### Water Quality Pollution Budget



- Total Maximum Daily Load Plans
- Restoration Alternative Plans
  - Permitting
  - Remediation
  - Others
- Protection Plans

**TMDL = Point Sources(LA) + Nonpoint Sources (WLA) + Background + Margin of Safety**



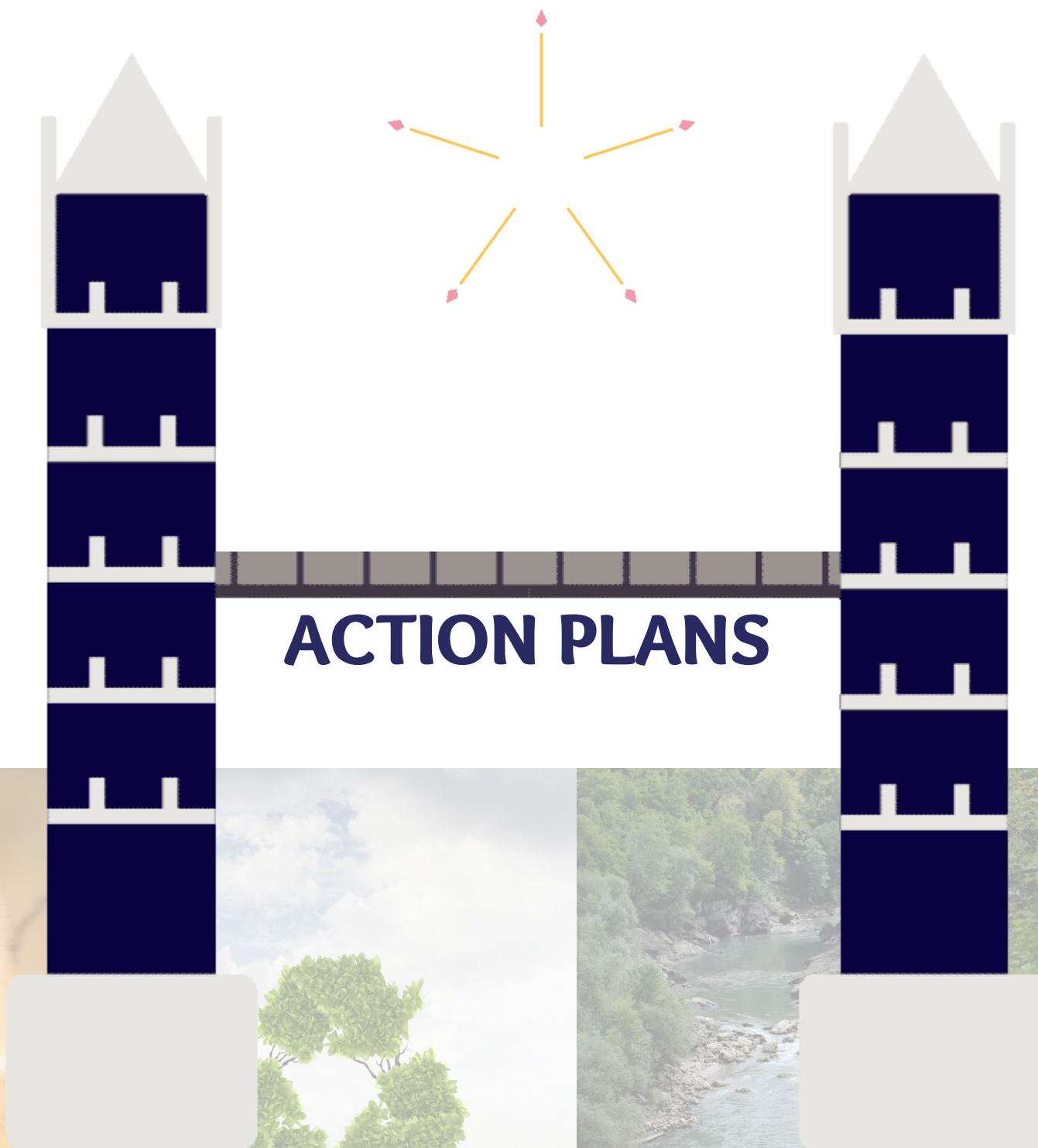


# Stage 5 ~ Set Planning Priorities

Water Quality Plans ~ Restoring and Protecting CT Waterbodies

## Data and Goals

- Data
- Standards and Criteria
- Monitoring
- Natural Resource Information



## Implementation

- Remediation
- Permitting
- Non-point Source Programs
- Watershed Based Plans







# IWQR Framework

## Stage 6

Plan Development



06

## Stage 5

Set Planning  
Priorities



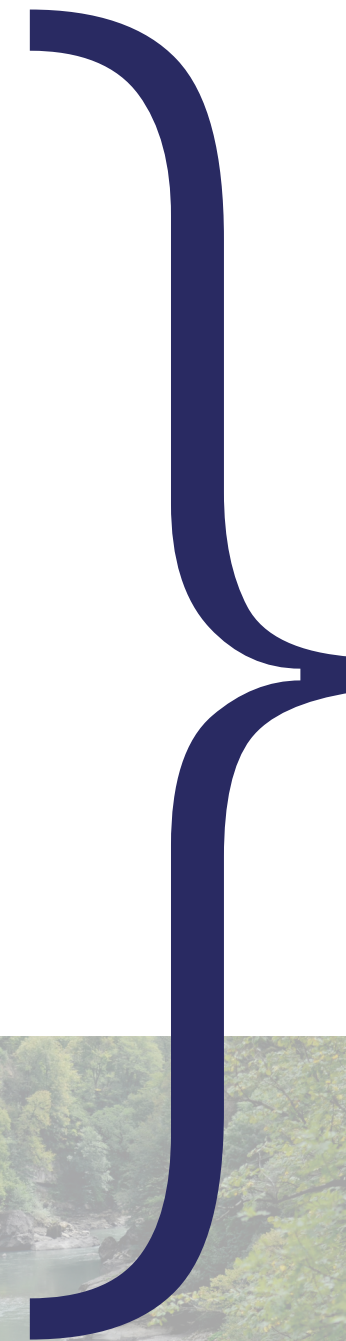
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## Stage 4

- Report Conditions and List Impairments



04



**303 (d)**

**Impaired Waters**

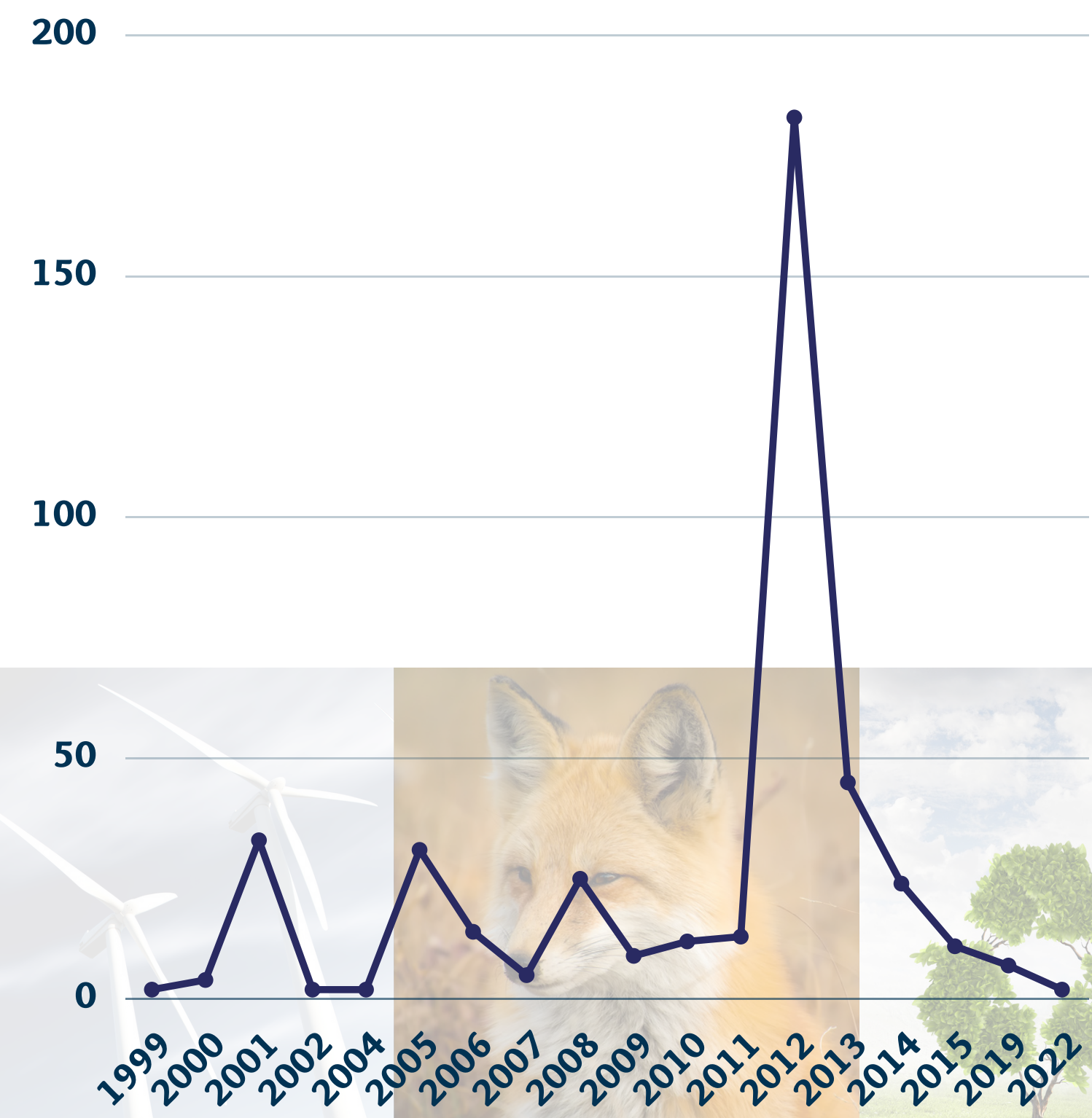




# Stage 6 ~ Plan Development

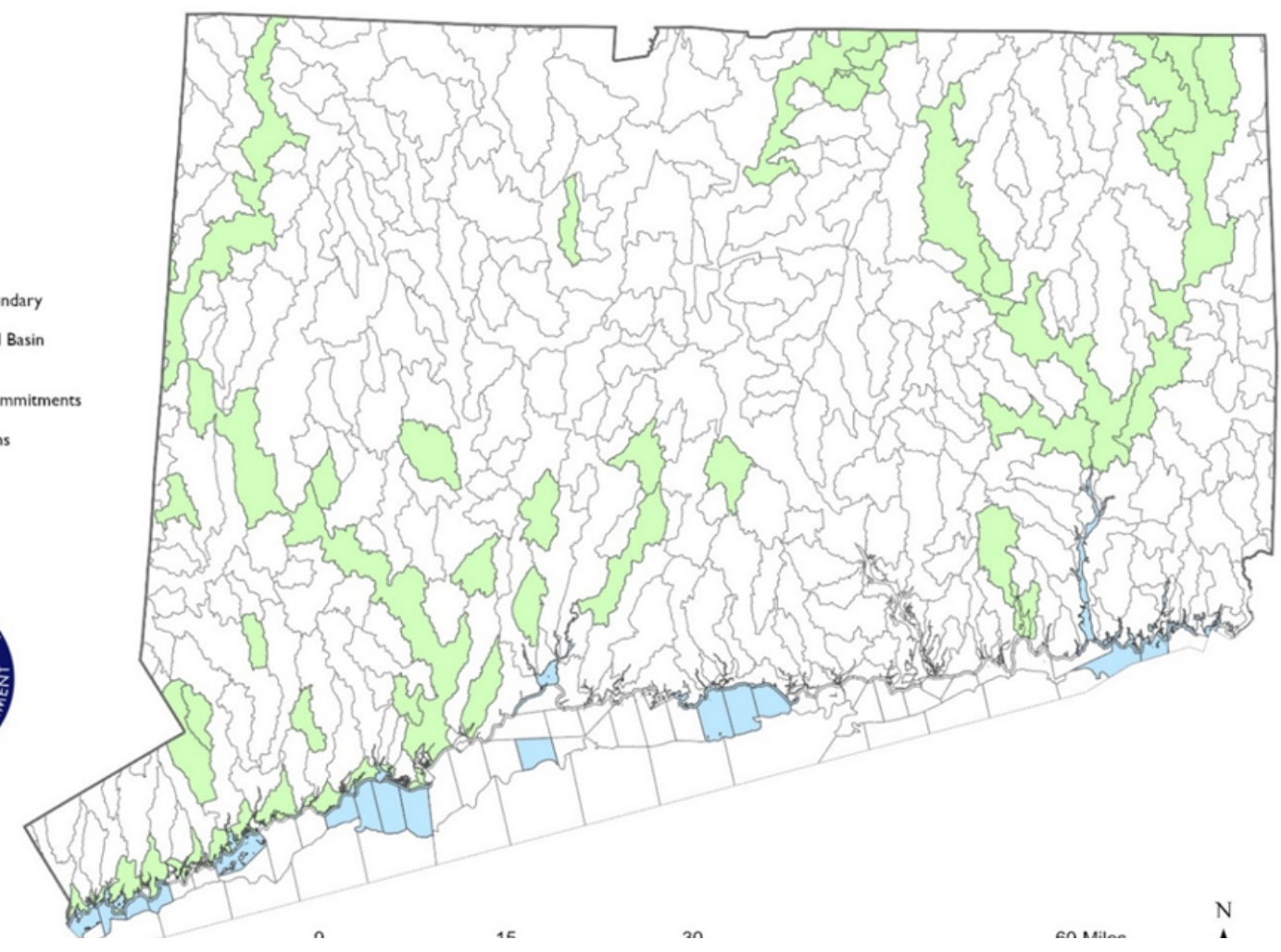
Water Quality Plans ~ Restoring and Protecting CT Waterbodies 2022-2024

Number of CT TMDLs Developed Over Time



Legend

- Connecticut Boundary
- 2022 Subregional Basin Commitments
- 2022 Estuary Commitments
- Subregional Basins
- Estuary



- Bacteria TMDLs - Over 80 segments currently in development.

Complete list of waterbodies can be found in Appendix C-1





# Stage 6 ~ Plan Development

## Water Quality Plans ~ Restoring and Protecting CT Waterbodies 2022-2024

### Alternative Restoration Plans

- Impervious Cover Response Plan
- Remediation Alternative Plans
- Interim Phosphorus Strategy Implementation

### Other TMDLs

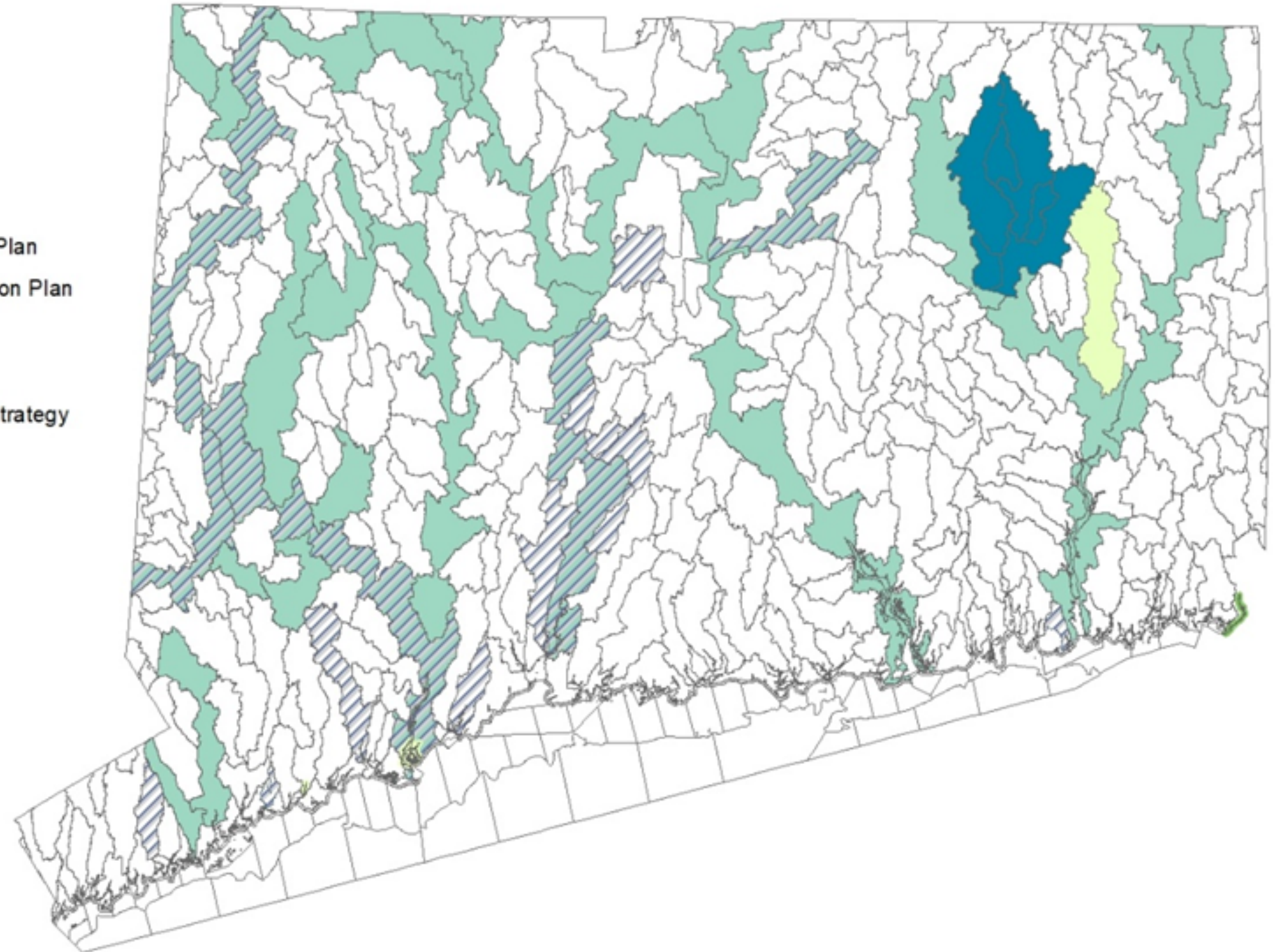
- TMDL Revision for Rainbow Brook and Seymour Hollow Brook
- Lake Nutrient TMDLs

### Protection Plans

- Natchaug
- Niantic

#### Legend

- Subregional Basin
- Estuary
- Natchaug Protection Plan
- Alternative Remediation Plan
- Pawcatuck TMDL
- IC Response Plan
- Interim Phosphorus Strategy



Created 2022



# Stage 6 ~ Plan Development

Water Quality Plans ~ Restoring and Protecting CT Waterbodies 2022-2024

## Estuary TMDLs~ Pawcatuck

Complete list of waterbodies can be found in Appendix C-1

- Upland and Coastal data has been collected
- Model is developed for upland watershed
- Coastal Model is in development
- Models will be combined to set water quality targets for DO, Clarity, N and P



## Additional Embayments Post 2024

Complete list of waterbodies can be found in Appendix C-2

- Stonington
- Norwalk Harbor
- Mystic River
- Southport Harbor
- Saugatuck River
- Niantic River

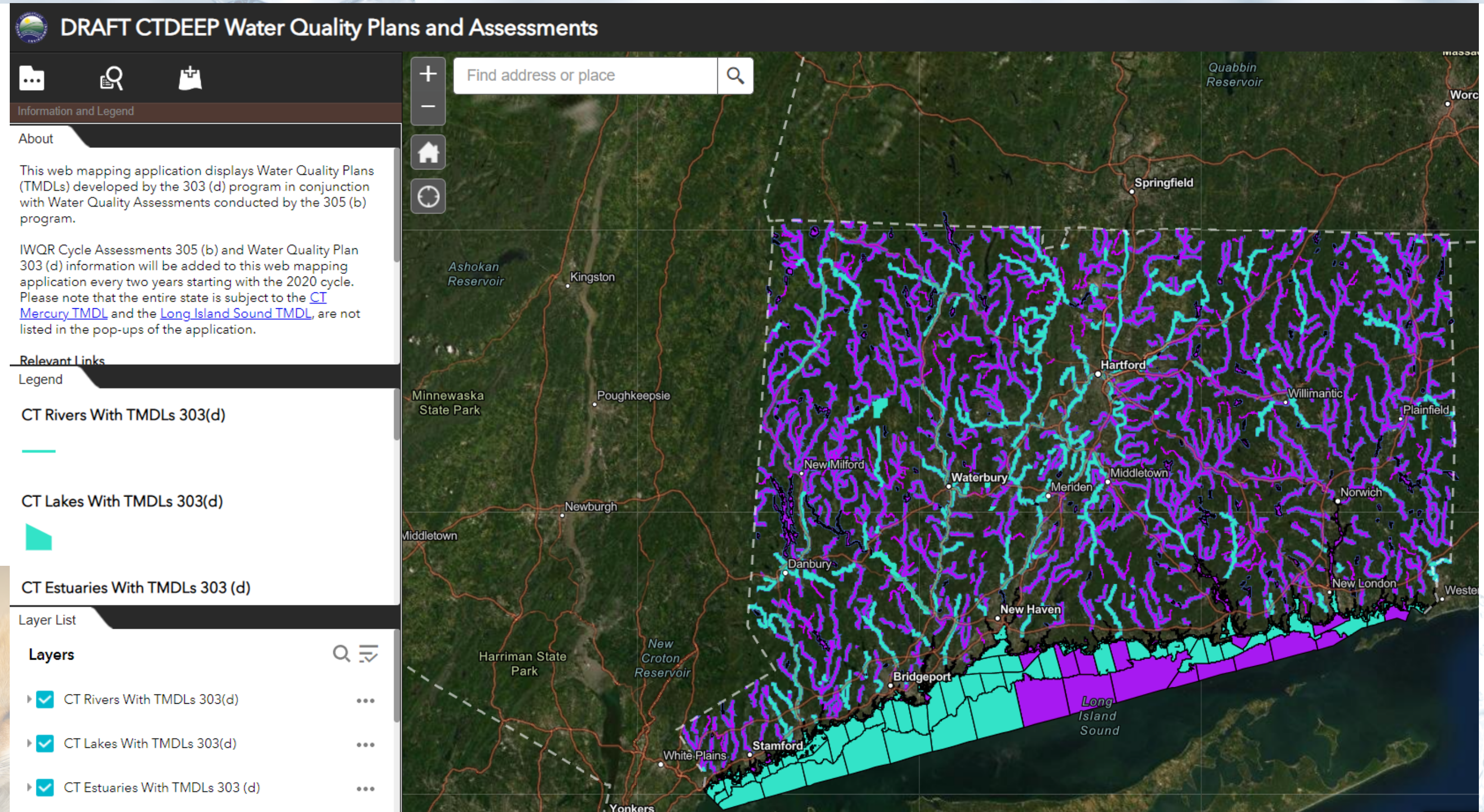




# NEW IWQR 2022 Web Mapping Application

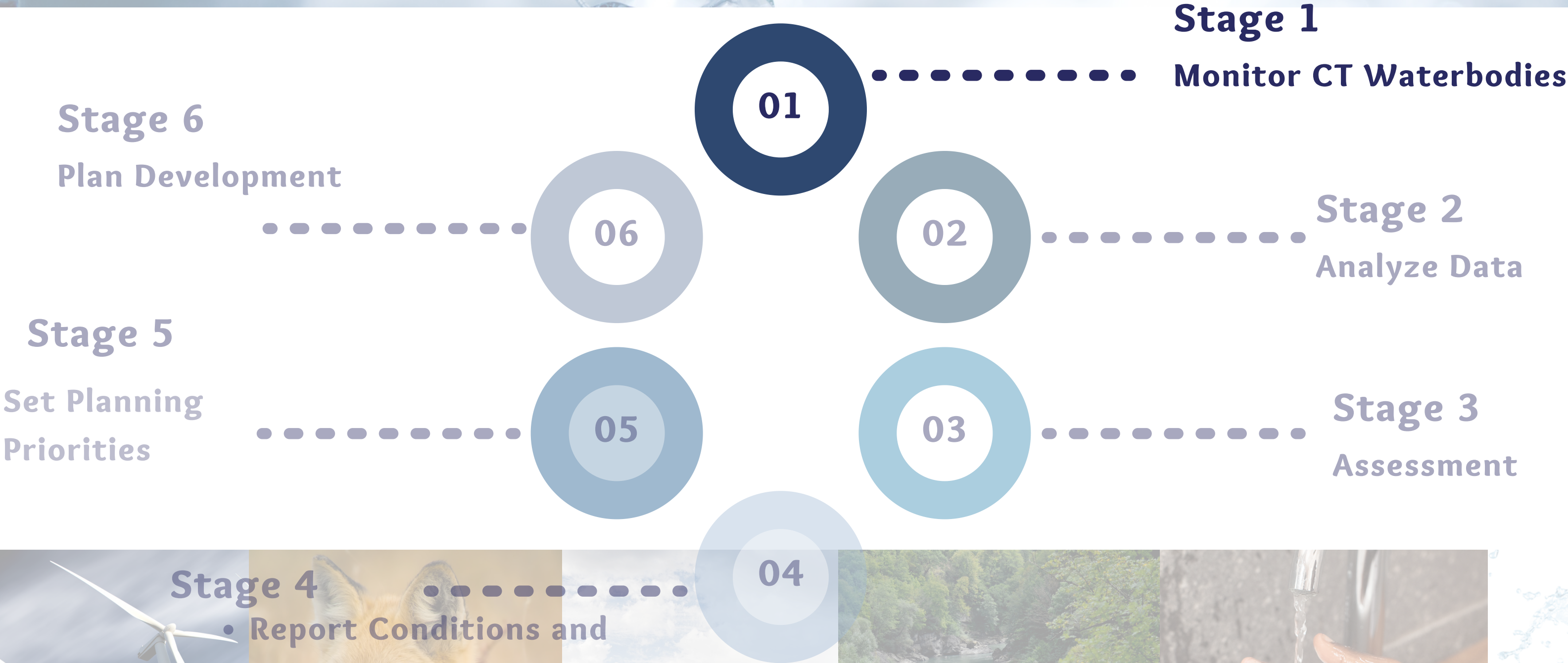
## Features

- View and Download 305 (b) and 303 (d) information
- Add data
- Export data





# IWQR Framework



**And then we start all over again!**





# Questions ?

Comments must be in writing and directed to **Rebecca Jascot** at **DEEP.IWQR@ct.gov** by **July 6, 2022**

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