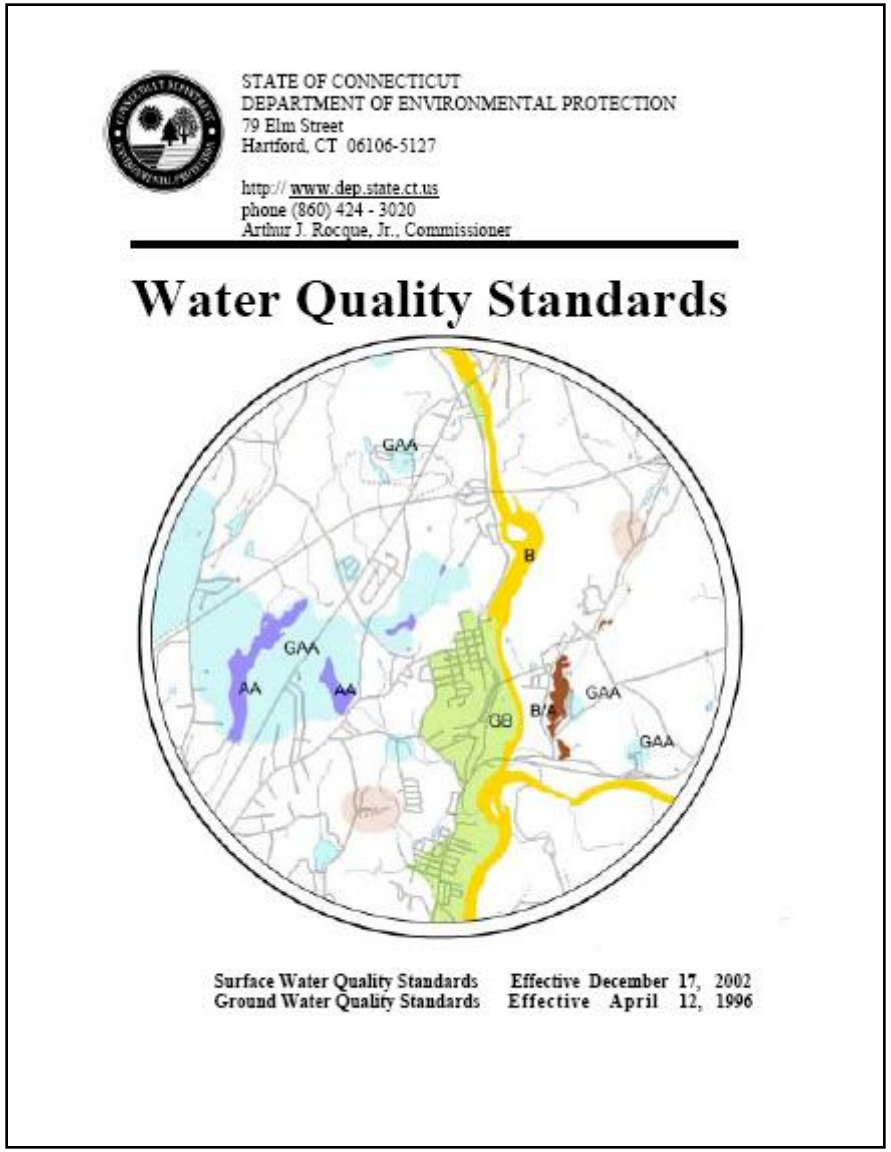
CT Water Quality Standards

Proposed Revisions
Dated
December 22, 2009



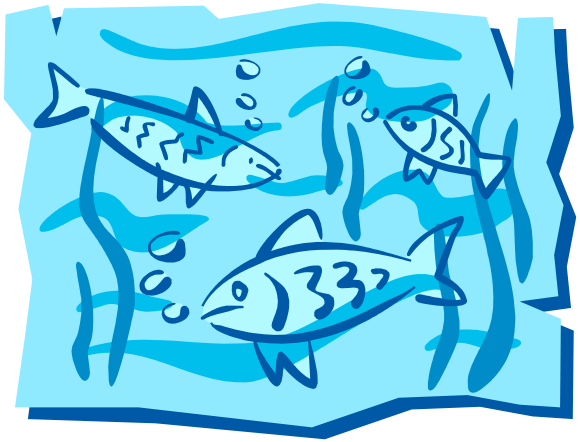
STATE OF CONNECTICUT
DEPARTMENT OF ENVIRONMENTAL PROTECTION
79 Elm Street
Hartford, CT 06106-5127

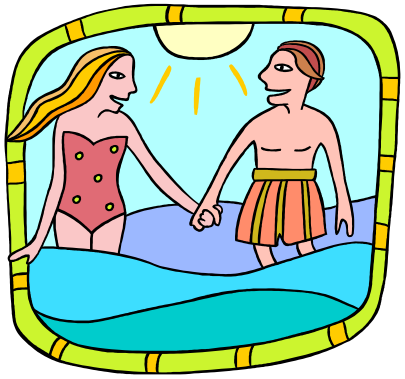
http:// www.dep.state.ct.us
phone (860) 424 - 3020
Arthur J. Rocque, Jr., Commissioner

Water Quality Standards

Surface Water Quality Standards Effective December 17, 2002
Ground Water Quality Standards Effective April 12, 1996

WATER QUALITY STANDARDS:
BACKGROUND INFORMATION



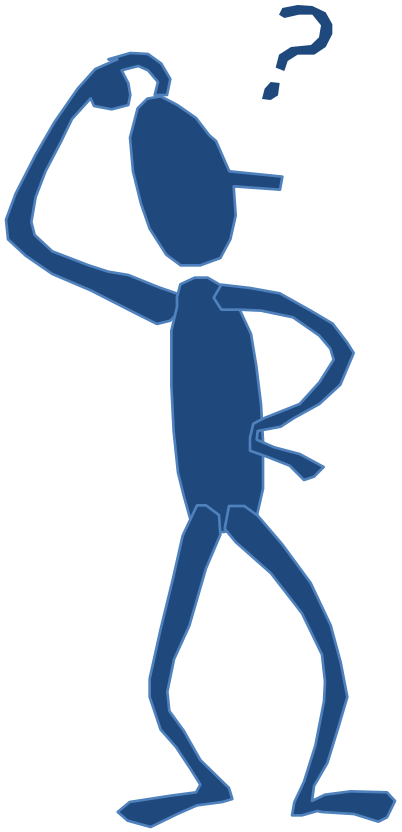


WQS & the Law

- Adoption and periodic revision of WQS is required by both federal and state law
  - Section 303 of the Federal Clean Water Act
  - Section 22a-426 of the Connecticut General Statutes

What are WQS?

- Foundation of the water quality-based control program mandated by the Clean Water Act
- Define the goals for a waterbody by
  - designating its uses
  - setting criteria to protect those uses
  - establishing provisions to protect water quality from pollutants

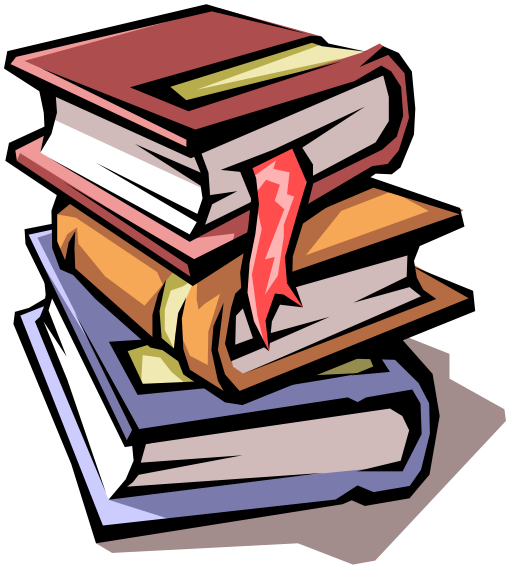


Why are WQS Important?

- Protect and restore the quality of the surface waters
- Identify water quality problems
- Support efforts to achieve and maintain protective water quality conditions within various regulatory programs

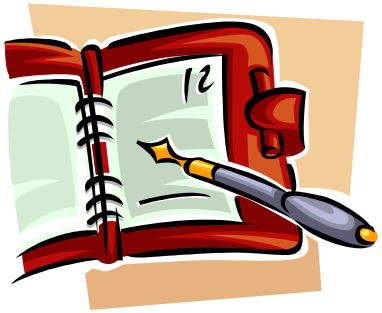
WQS Changes & Existing Regulations

- Changes in the WQS do not change currently adopted state regulations
  - WQS provide support to regulatory programs
  - Existing regulations do not change "automatically" by revision of the WQS
  - Changes to existing regulatory programs would need to follow procedures for revising and adopting regulations.



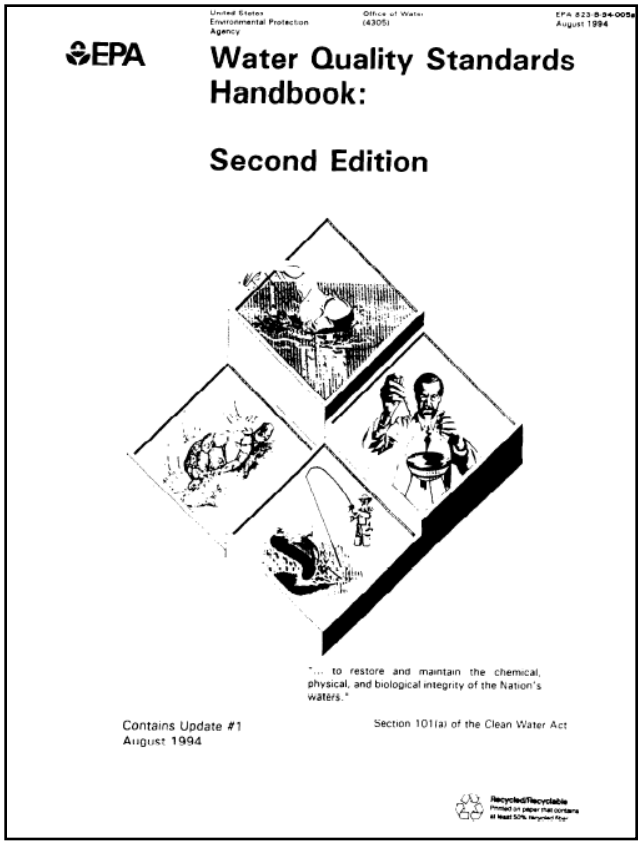
WQS Review and Revision

- The Clean Water Act requires States to review their standards and revise them if appropriate.
- Updates may be needed to address:
  - due to changing water quality conditions or water body uses
  - new scientific information
  - programmatic requirements or guidance established by EPA
- Must include consideration of comments from the public
- New or revised Water Quality Standards become effective for purposes of the Clean Water Act upon EPA approval.



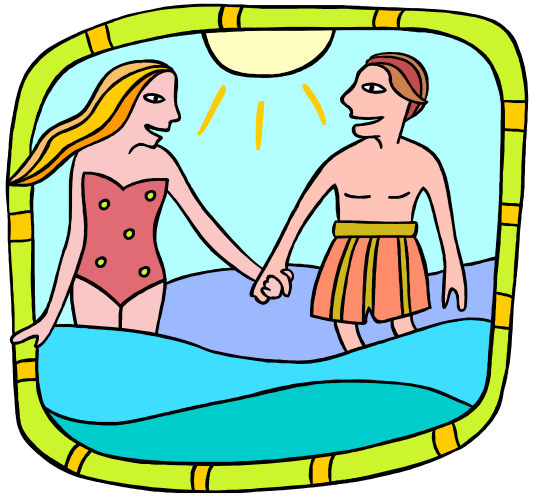
Examples of Topics of Concern to EPA

- Update to Toxics Criteria
- Development of Criteria for Nutrients
- Update Antidegradation Policy



Role of the Public

- The Public has a clear interest in the quality of Connecticut's waters
- State and Federal law require public input into the revision process for the WQS
- A public hearing is mandatory

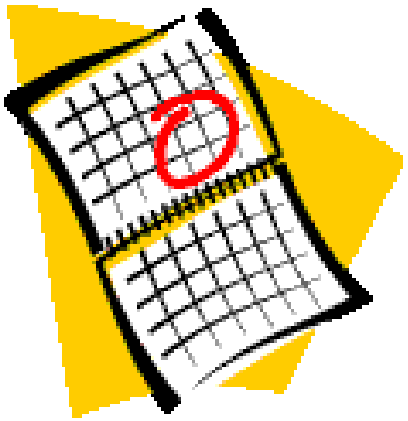


Public Process for Current Proposed Revisions

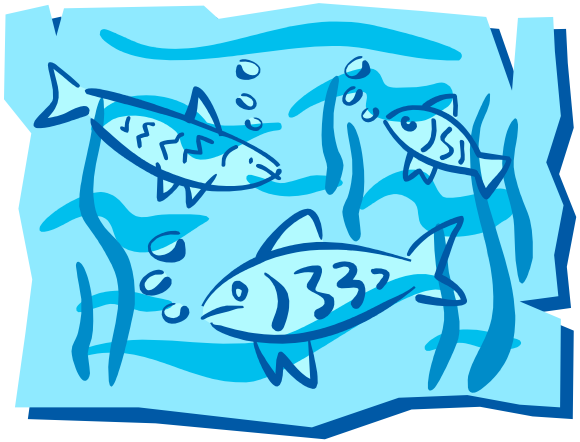
- April 16, 2009
  - DEP provides a notice of intent to conduct a triennial review of the WQS and opens informal public comment period on topics to consider during review/revision of WQS
- July 15, 2009
  - DEP extends informal public comment period to July 31, 2009
- Outcome
  - Comments received from 14 interested parties
  - Major areas of interest
    - Nutrients
    - Antidegradation
    - Temperature
    - Criteria for toxic chemicals including copper, nonylphenol and ammonia

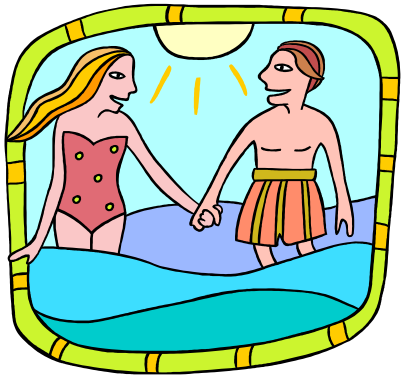
On-going Public Process

- Public Comment period is currently open
  - December 22, 2009 – February 15, 2010
- Public Informational Meeting Scheduled
  - January 26 (snow date Jan 28)
  - 9:30 AM Russell Hearing Room at CTDEP
- Public Hearing Scheduled
  - February 3 (snow date Feb 4)
  - 1:30 PM in Phoenix Auditorium at CTDEP
- DEP Staff available to answer questions on proposed revisions



WATER QUALITY STANDARDS:
PROPOSED REVISIONS





Policies
Describes desired goals and environmental characteristics for the physical, chemical and biological components of the ecosystem

Policies

WQ Standards

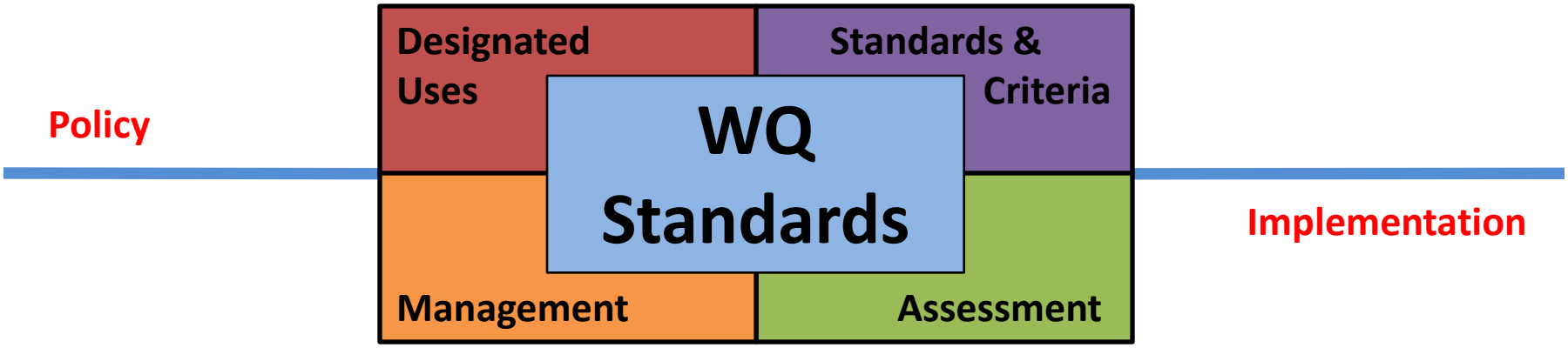
Implementation

Implementation
Identifies key components of WQ Management Program integral to implementation of established policies

WQ Paradigm

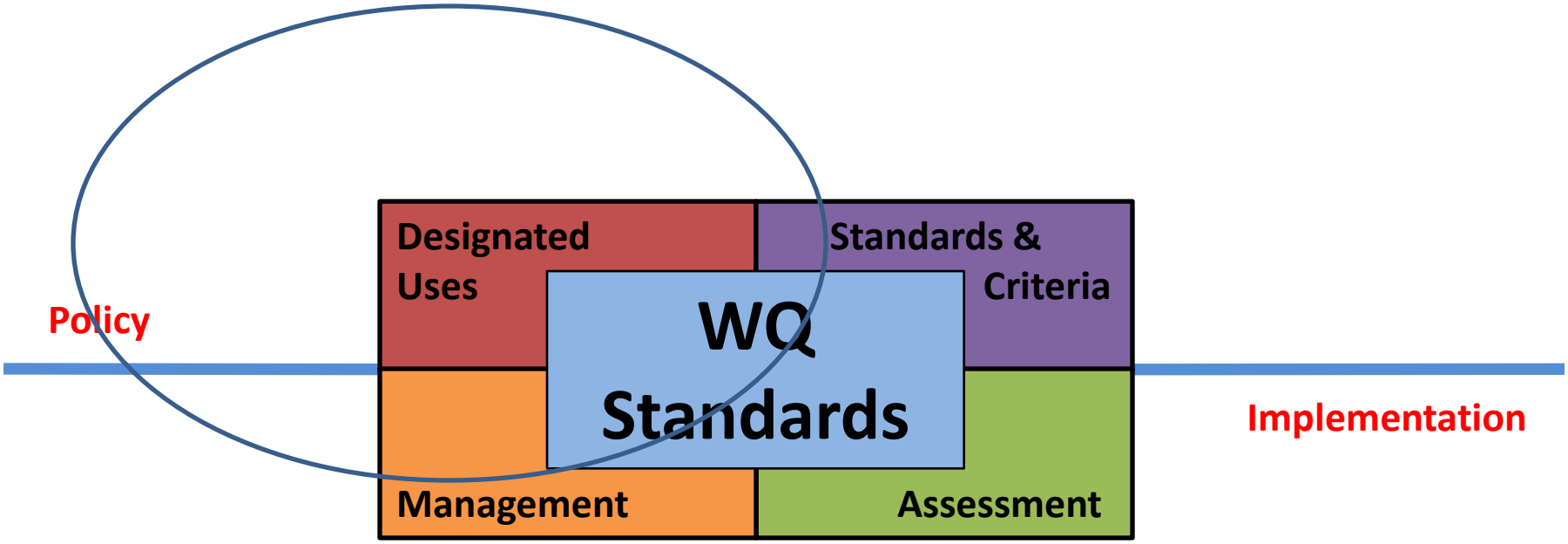
Designated Uses
Describes societal and ecological uses of the aquatic environment

Standards & Criteria
Ascribes environmental characteristics to the physical, chemical and biological components of the ecosystem



Management
Contains data from programs directly or indirectly involved in supporting and/or implementing a projects that affect water quality

Assessment
Establishes and executes procedures to evaluate environmental quality

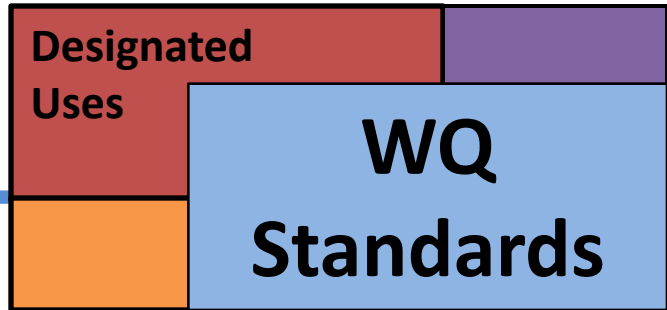

Policy
Designated Uses
Standards & Criteria
WQ Standards
Management
Assessment
Implementation

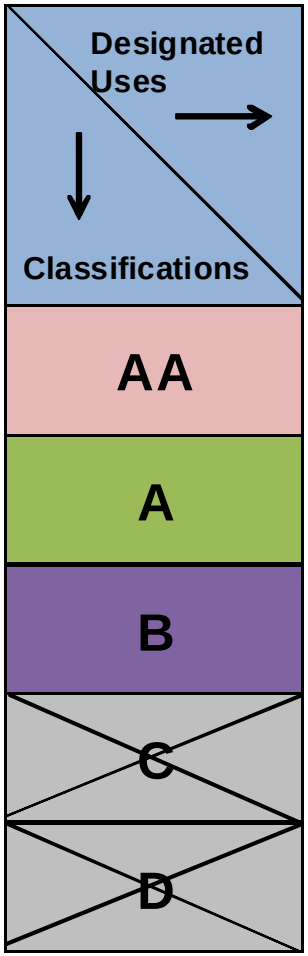
Designated Uses → / Classifications ↓	Existing or Proposed Drinking Water Supply	Potential Drinking Water Supply	Habitat for fish, aquatic life or wildlife	Recreation	Industrial and Agricultural Supply	Navigation
AA						
A						
B						
C						
D						

Classifications

Describes Designated Uses but does not necessarily reflect environmental quality. Quality is often assumed, based on the prescribed uses, but may not be reflective of actual conditions

Policy

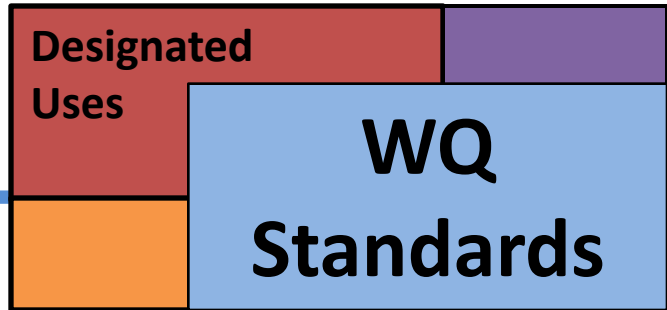




Designated Uses: WQ Classifications

Establish classifications as showing only the goal classification for surface waters. This was done with groundwater resources previously.

Policy

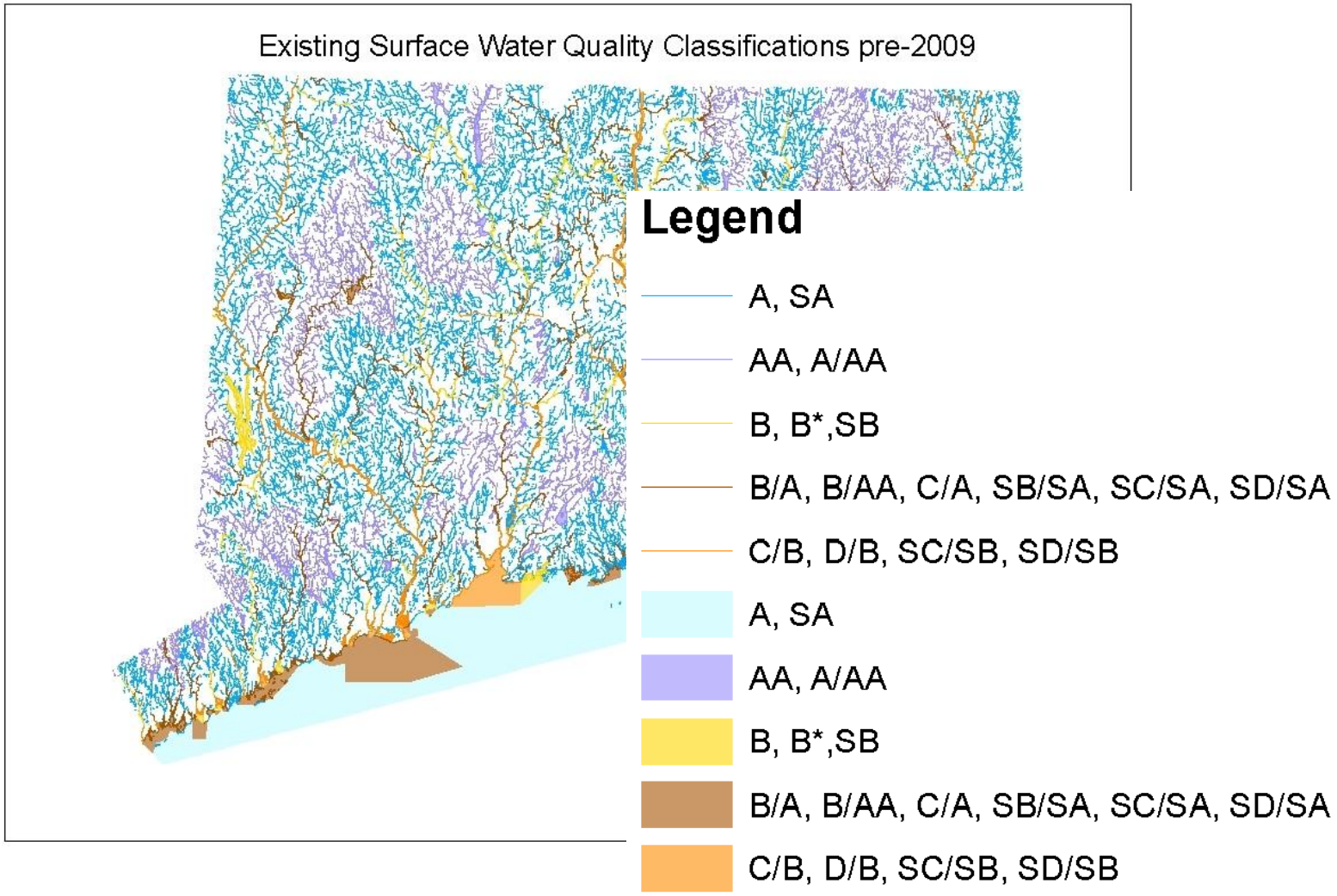


Revise Maps to Show Goal Classifications

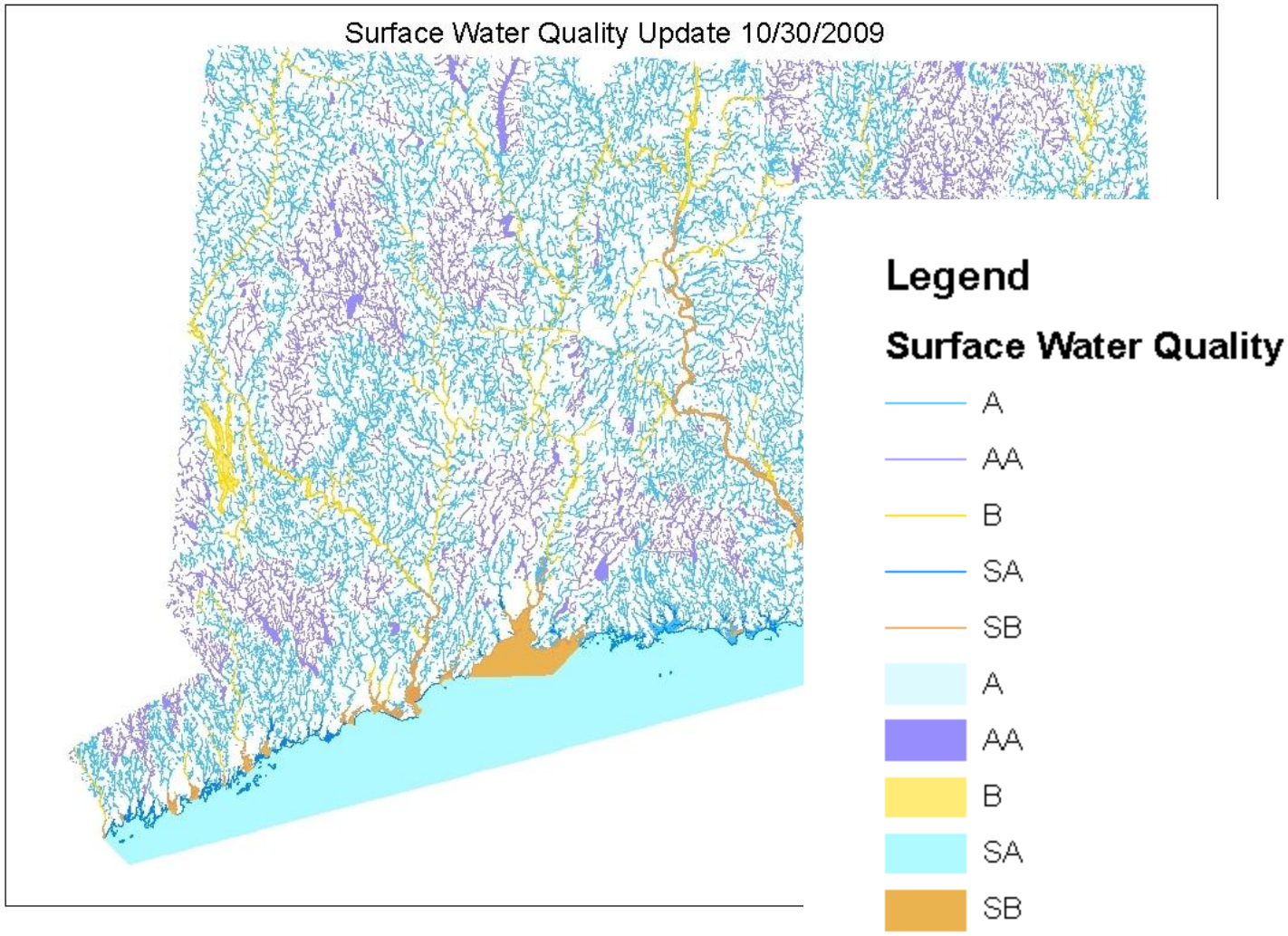
- Current paradigm of current/goal classification is eliminated from surface water standards
- Class C and D waters are eliminated since these designations do not represent goal classifications
- Remaining Classifications: AA, A and B
- Change is intended to provide clarity and consistency with CT Groundwater Standards
- No effect on WQ related requirements or activities since current WQS require all actions to be consistent with goal classifications

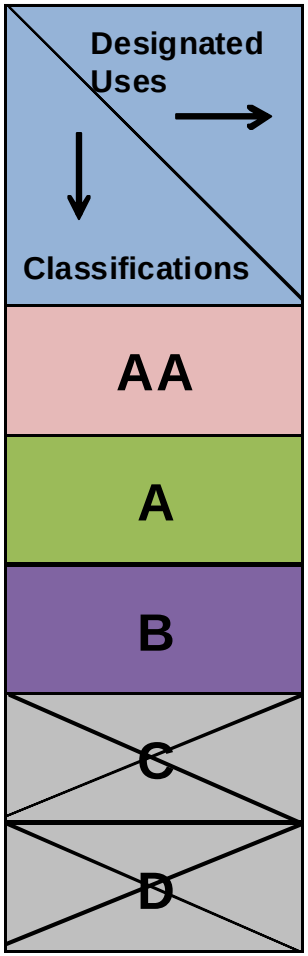
NO CHANGES TO GOAL CLASSIFICATIONS HAVE BEEN PROPOSED

Current WQ Classification Map



Proposed WQ Classification Map

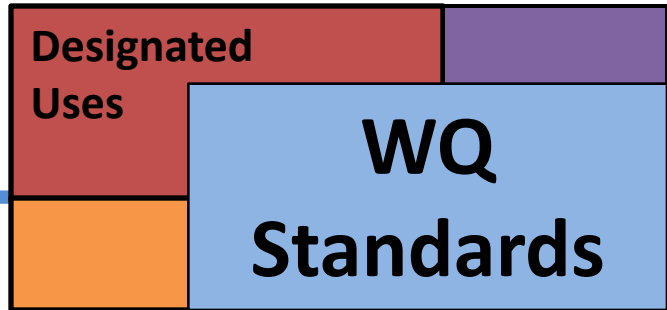




Designated Uses: Groundwater Issues

Develop language for Standards to address existing failing septic systems in GA areas.

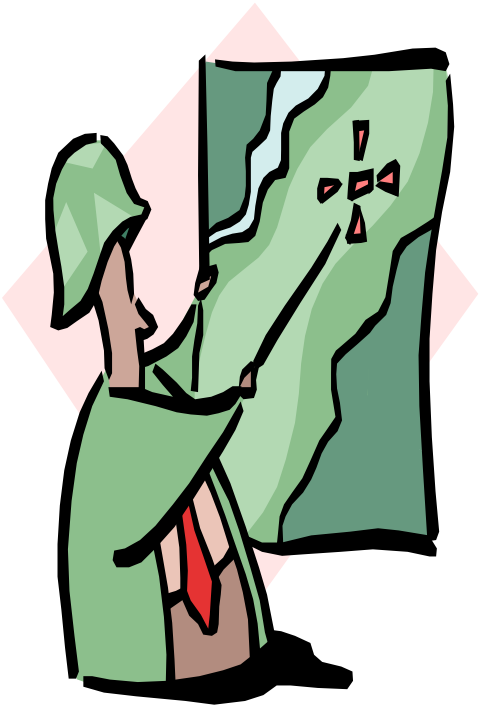
Policy

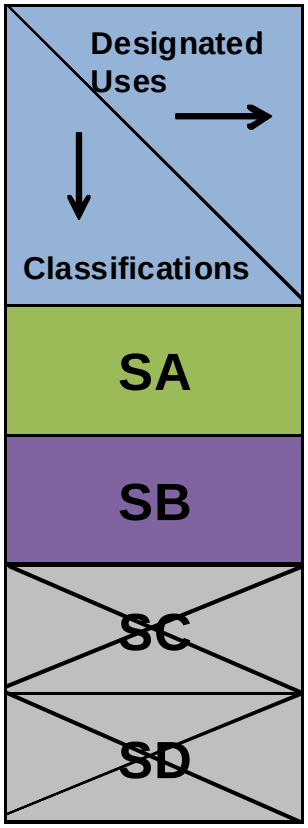


Designated Use: Lateral Sand Filters & Other Limited Sewage Disposal Systems

- Current Standards provide no exception for allowing the already existing discharge from Lateral Sand Filters or other subsurface sewage treatment system to Class A water bodies

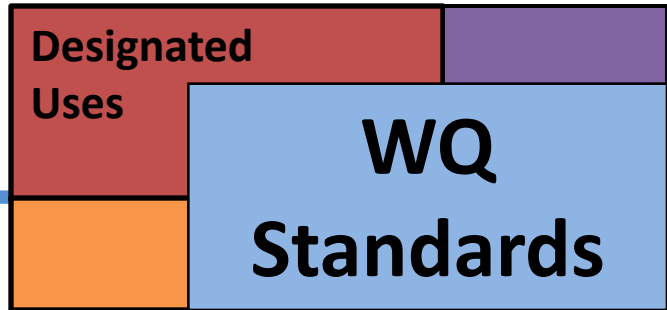
- Language added to Standard 9 to allow for such discharges when such system currently exists (historic use),no other feasible alternative exists, highest level of treatment is achieved and the discharge is not expanded





Designated Uses : Shellfishing

Modify language as necessary to reflect current understanding of shellfishing uses based on discussions with Department of Aquaculture Staff



Shellfish Harvesting Use

- Connecticut Department of Agriculture Bureau of Aquaculture (DA/BA) is the lead State agency responsible for shellfish *Connecticut General Statutes Chapter 491, Sec. 26-192a*.

- Classify growing areas in accordance with Interstate Shellfish Sanitation Conference National Shellfish Sanitation Program Model Ordinance (NSSP-MO)

- Established to **minimize** health risks

- Classifications based on fecal coliform data, sanitary surveys, BPJ

Administering Shellfish

- Best Professional Judgment applied in classifications

- Under certain conditions, the Classification may result from an Administrative Decision

  - potential pollution sources (sewage outfalls and marinas/moorings),
  - preventative measure to safeguard human health,
  - preclude the harvest of possibly contaminated shellfish
  - incomplete sanitary surveys,
  - lack of water quality data,
  - insufficient shellfish resources/interest.

- DA\BA does not distinguish SA, SB, direct or commercial shellfishing

- DEP Assessments and Impairments

Appendix B Water Quality Criteria for Bacterial Indicators

Current

Saltwater
Shellfish Harvesting

Class	*Indicator*	*Criteria*
SA	Fecal coliform	Geo Mean <14/100ml 90% of Samples <43/100ml
SB	Fecal coliform	Geo Mean <88/100ml 90% of Samples <260/100ml

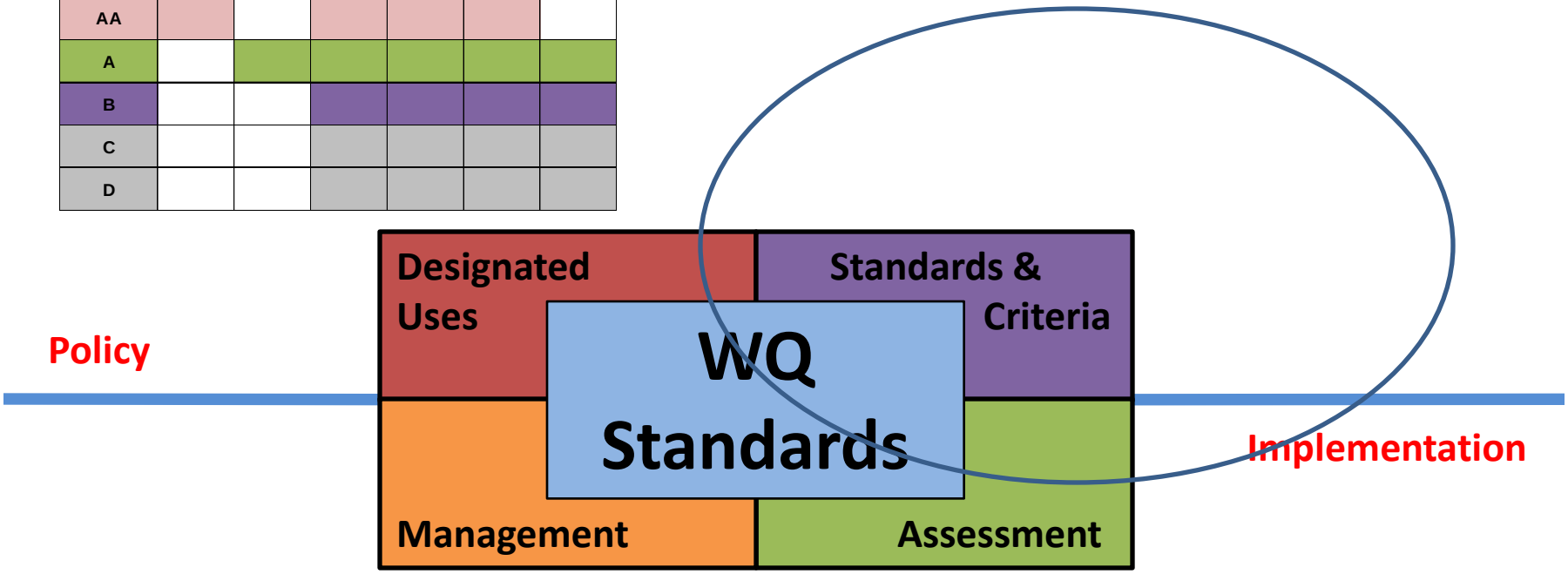
Proposed

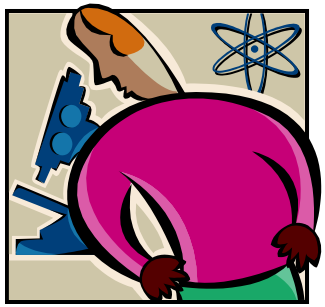
Saltwater
Direct Shellfish Harvesting (6)

Use	Indicator	Criteria
Direct Harvest	Fecal coliform	Geo Mean <14/100ml 90% of Samples <31/100ml

(6) Criteria are based on utilizing the mTec method as specified in the U.S. Food and Drug Administration National Shellfish Sanitation Program-Model Ordinance (NSSP-MO) document *Guide for the Control of Molluscan Shellfish 2007. See Appendix G for additional details.*

Designated Uses → / Classifications ↓	Existing or Proposed Drinking Water Supply	Potential Drinking Water Supply	Habitat for fish, aquatic life or wildlife	Recreation	Industrial and Agricultural Supply	Navigation
AA						
A						
B						
C						
D						





Standards & Critiera:

Provides narrative and numeric description of environmental conditions necessary to achieve designated uses

Nutrient Criteria –

Evaluated potential changes to Standards to consider EPA EcoRegional Criteria for Phosphorus and reflect updated approach to nutrient management in Connecticut

Standards & Criteria

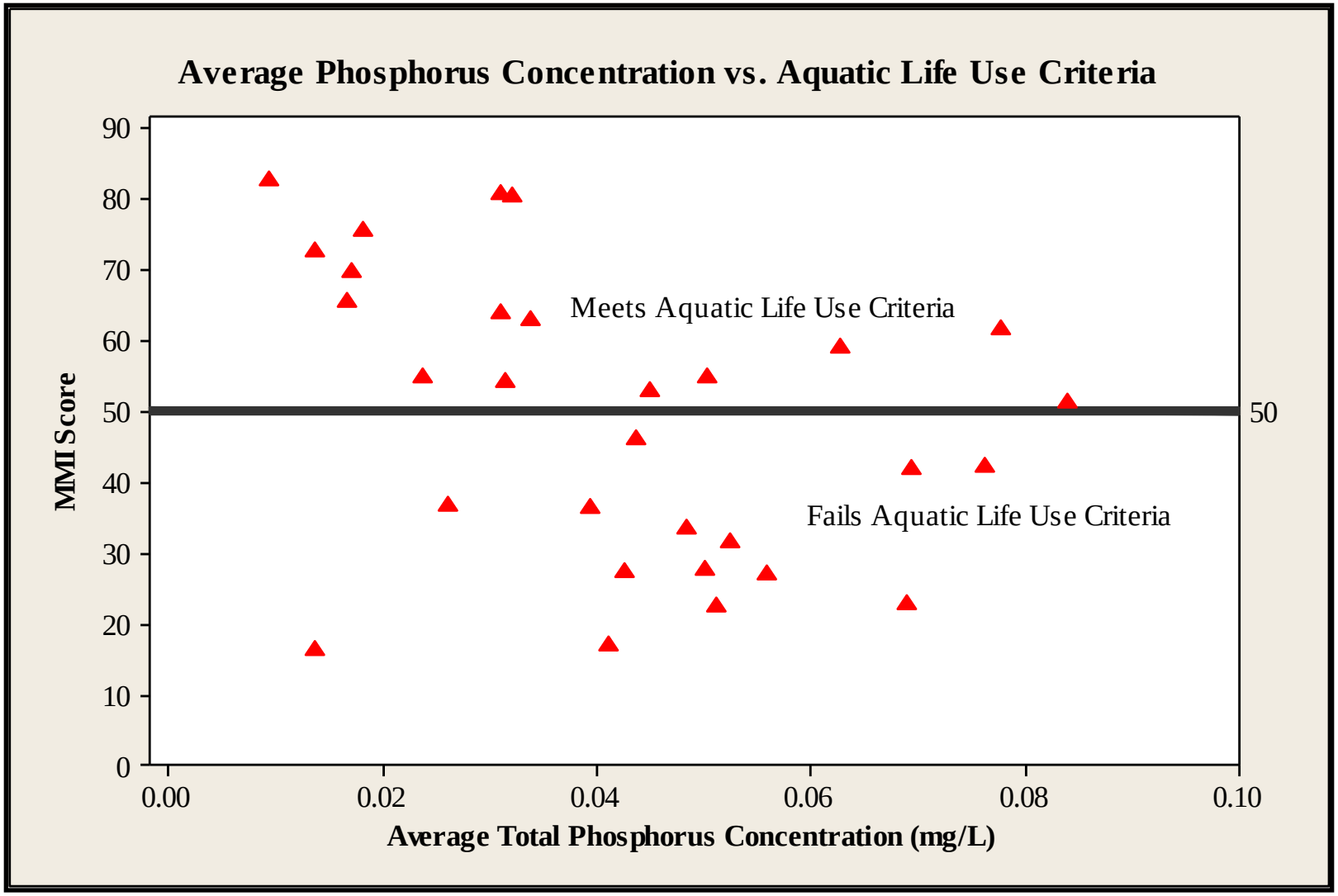
WQ Standards

Policy

Nutrient Criteria

- Narrative criterion for nutrients was retained
  - Proposed EPA numeric criterion for Phosphorus does not take into consideration unique attributes of various waterbodies that affect the acceptable concentration of nutrients in each waterbody
- Clarification added to indicate that the narrative criterion is focused on achieving acceptable WQ conditions including attainment of designated uses

Phosphorus is NOT a Threshold Pollutant



Cannot Define Threshold of Impairment

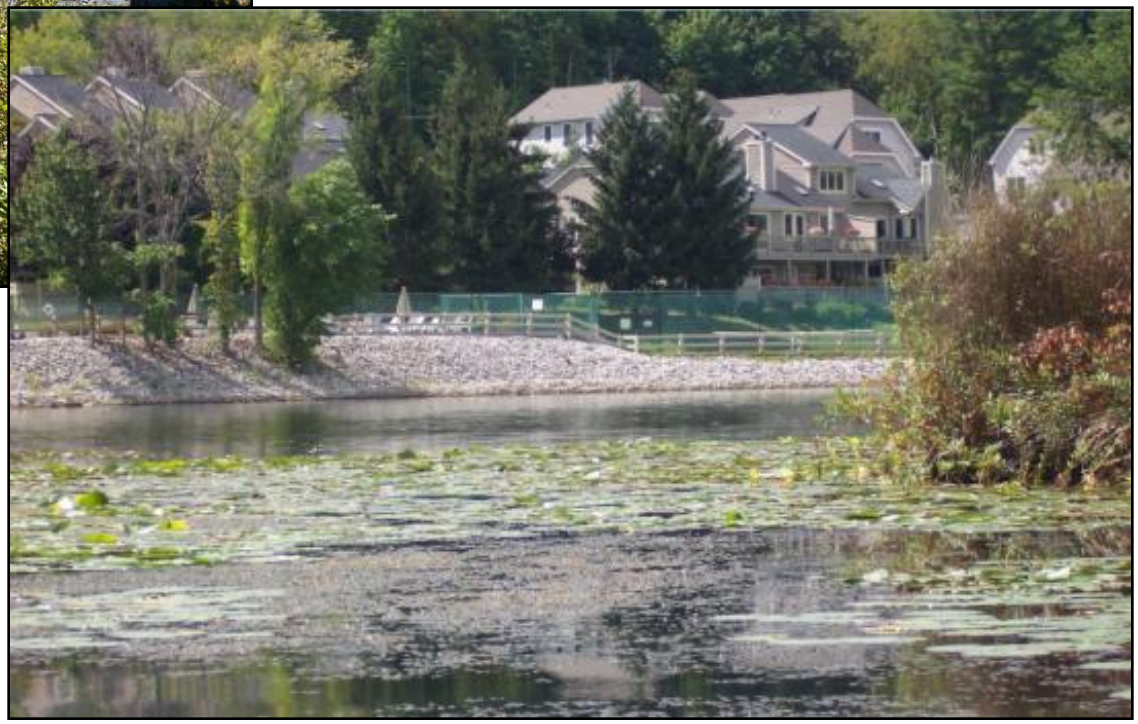
Varying Enrichment Conditions Supporting Healthy Aquatic Life Communities and Recreational Uses

Nutrient Implementation Strategy

- An Implementation Strategy for nutrients is added to the WQS to support implementation of narrative criterion
  - Nitrogen: Implementation through the Long Island Sound TMDL
  - Phosphorus: Implementation through the Best Attainable Reference Condition Approach

Target Anthropogenic Enrichment Not Natural Enrichment

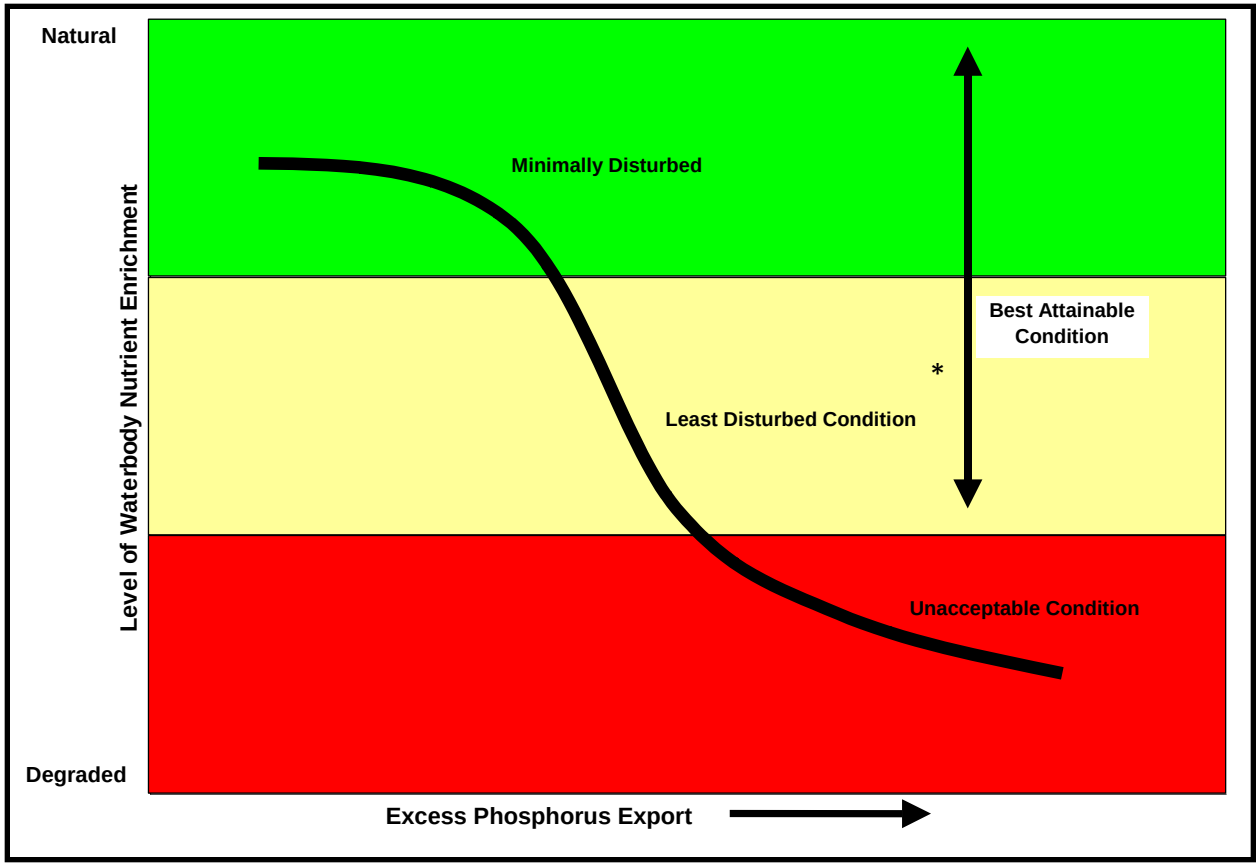
Natural Enrichment



Anthropogenic Enrichment

Achieve the Best Attainable Condition (BAC)

The BAC reflects use of the best management practices available at the time to achieve enrichment conditions under normal uses of the land

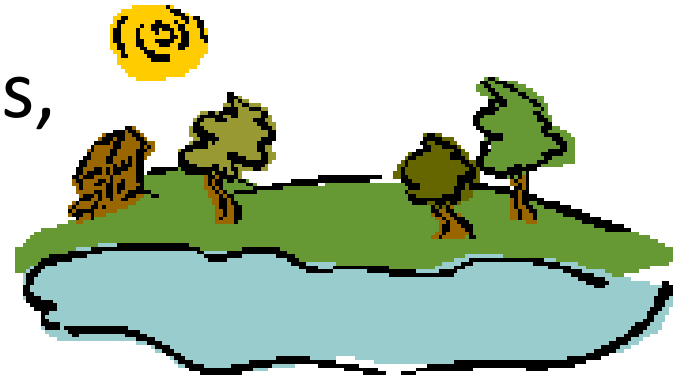


- Similar to a TMDL
- Considers Acceptable Nutrient Loadings consistent with WQS
- Statewide application
- Significant reductions in nutrient loadings expected

* (Stoddard, 2006)

Trophic Guidance for Lakes

- Clarify that #s for Total Nitrogen, Total Phosphorous, Chlorophyll A, and Secchi disk transparency, are guidance values
- Add guidance to use macrophytes as a means to determine lake trophic status



Numeric Water Quality Criteria for Toxics

1. Update list of chemicals with criteria

2. Update Aquatic Life Criteria and Human Health based criteria

Update of Criteria for Toxic Substances

- Update List of Chemicals with WQC
  - Include chemicals required by Section 307(a) CWA
  - Expanded to include other chemicals commonly regulated within CT
- Update Aquatic Life Criteria and Human Health Protection Criteria
- Worked with DPH for Human Health Revisions

Human Health Risk Issues

- New toxicity values based on search of multiple data sources (EPA, Cal EPA, ATSDR)
- Update Equations for Criteria Derivation
  - Address recent EPA Guidance
- Update Fish Consumption Rate: 6.5 gm/day to 20 gm/day

WQC – Aquatic Life

- Updated EPA Criteria

- Provide New Criteria
  - Using EPA Tier 1 & 2 procedures from 40 CFR 132 Appendix A
  - Criteria for additional substances
    - Obtained from Great Lakes WQ Clearinghouse
    - Calculated by CTDEP

Dissolved Oxygen Criteria

1. Evaluate/recommend potential changes to dissolved oxygen criteria for marine waters

Standards & Criteria

WQ Standards

Policy

Marine DO Criteria

- Goal 1:
  - Revise DO criteria to be protective of marine resources while considering consistency throughout LIS. Both the LISS and NYS use an acute DO criteria of 3.0 mg/l. CT DEP has continued to track compliance with the 3.0 mg/l criteria.
- Goal 2:
  - Revise the criteria to be applicable to all estuarine waters (inshore and offshore).

Proposed revision to the DO criteria:
Acute criteria: not < 3.0 mg/L at any time.
Chronic criteria: not < 4.8 mg/L with allowable excursions.
Proposed Criteria:

Table 4. DO Incremental ranges and duration data to be applied to LIS in the area affected to ensure protection of larval recruitment.

DO Range (mg/L)		No of Days Allowed
Maximum	Minimum	
4.8	4.5	30
4.5	4.0	14
4.0	3.5	7
3.5	3.0	2

*As long as the sum of the decimal fraction is less than 1.0, resource protection goals are maintained for larval recruitment.

Although this method increases the number of allowable excursion days, it does continue to provide a more conservative assessment of variable data while favoring progress by allowing more excursion days in the higher DO interval.

Temperature Criteria for Cold Water Fisheries

1. Evaluate current EPA criteria and updated science to determine if any changes to the current temperature criteria are possible at this time.

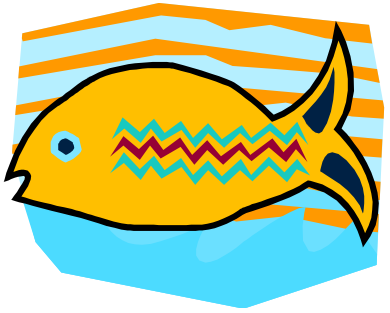
2. If temperature criteria will not be changed, develop a response to comments addressing the issue and projecting future actions.

Changes Proposed to Temperature Criteria

- EPA recommended criteria revisited
- Recommended federal approach based on fisheries study that provided data on thermal tolerance of various fish species with adjustment based on CT-specific data
- EPA recommends three types of values:
  - Average Weekly
  - Maximum Daily
  - Acceptable Temperature Change
- Proposed changes for both freshwater and marine criteria

Changes Proposed to Temperature Criteria

- Freshwater:
  - CT proposes criteria based on the temperature sensitivity of 3 key grouping of fish species
    - Cold Water Species
      - Trout, Slimy Sculpin
    - Cool Water Species
      - Pike, Native Minnows, Darters, Suckers
    - Warm Water Species
      - Perch, Sunfish



Designated Uses → / Classifications ↓	Existing or Proposed Drinking Water Supply	Potential Drinking Water Supply	Habitat for fish, aquatic life or wildlife	Recreation	Industrial and Agricultural Supply	Navigation
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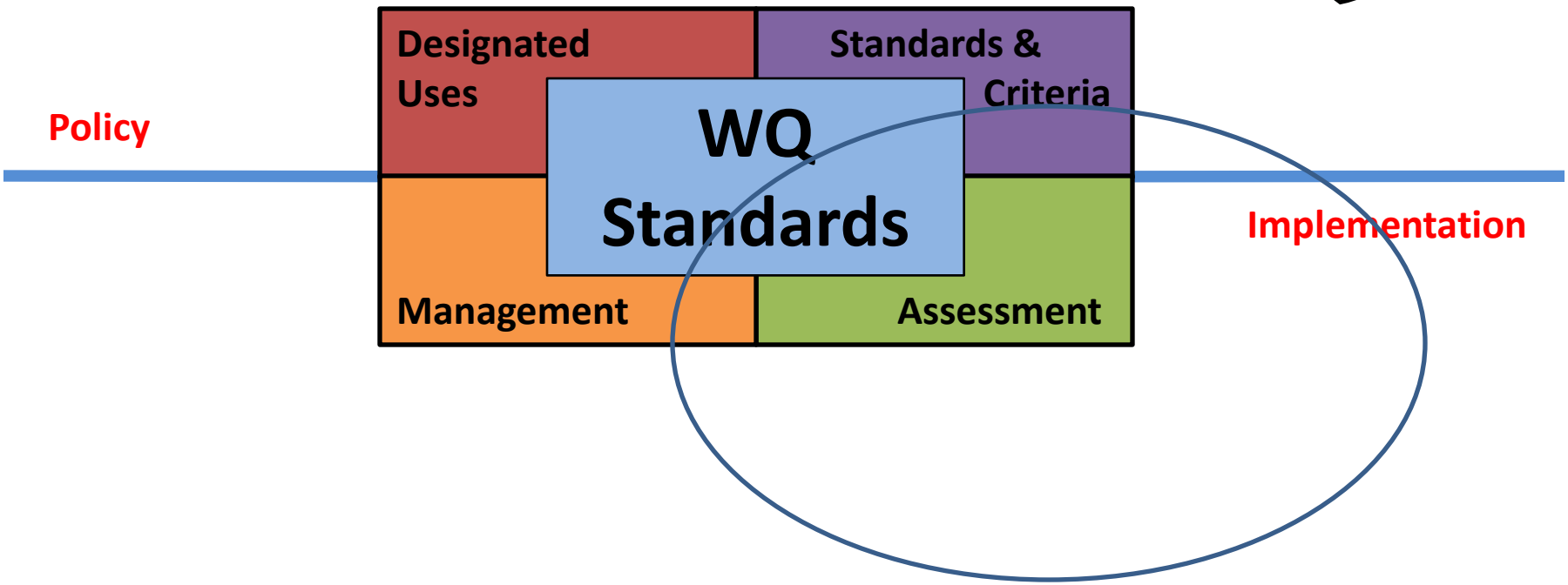


Assessment:

Procedures used to establish actual or anticipated environmental conditions

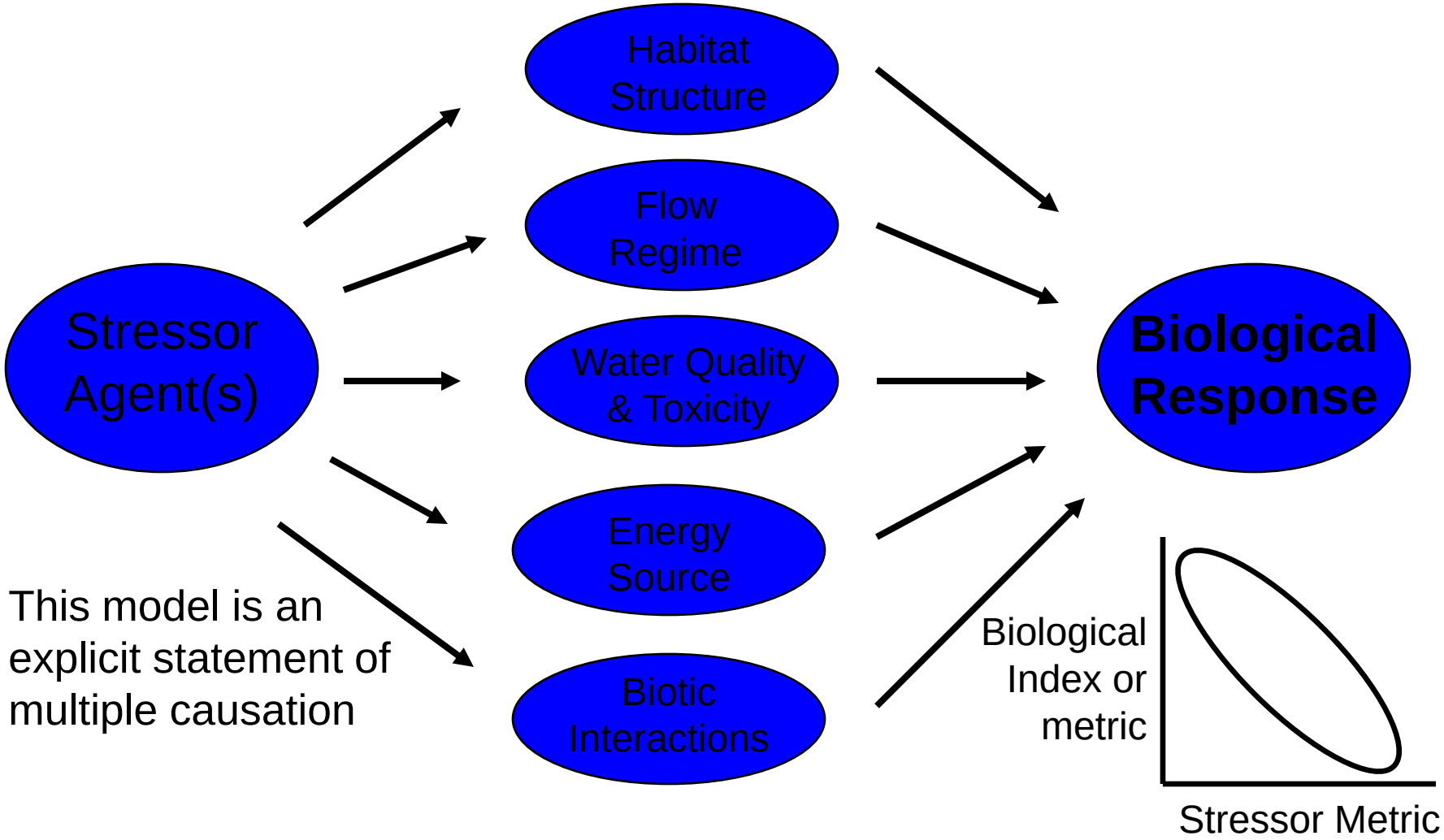
WQ Standards

Assessment

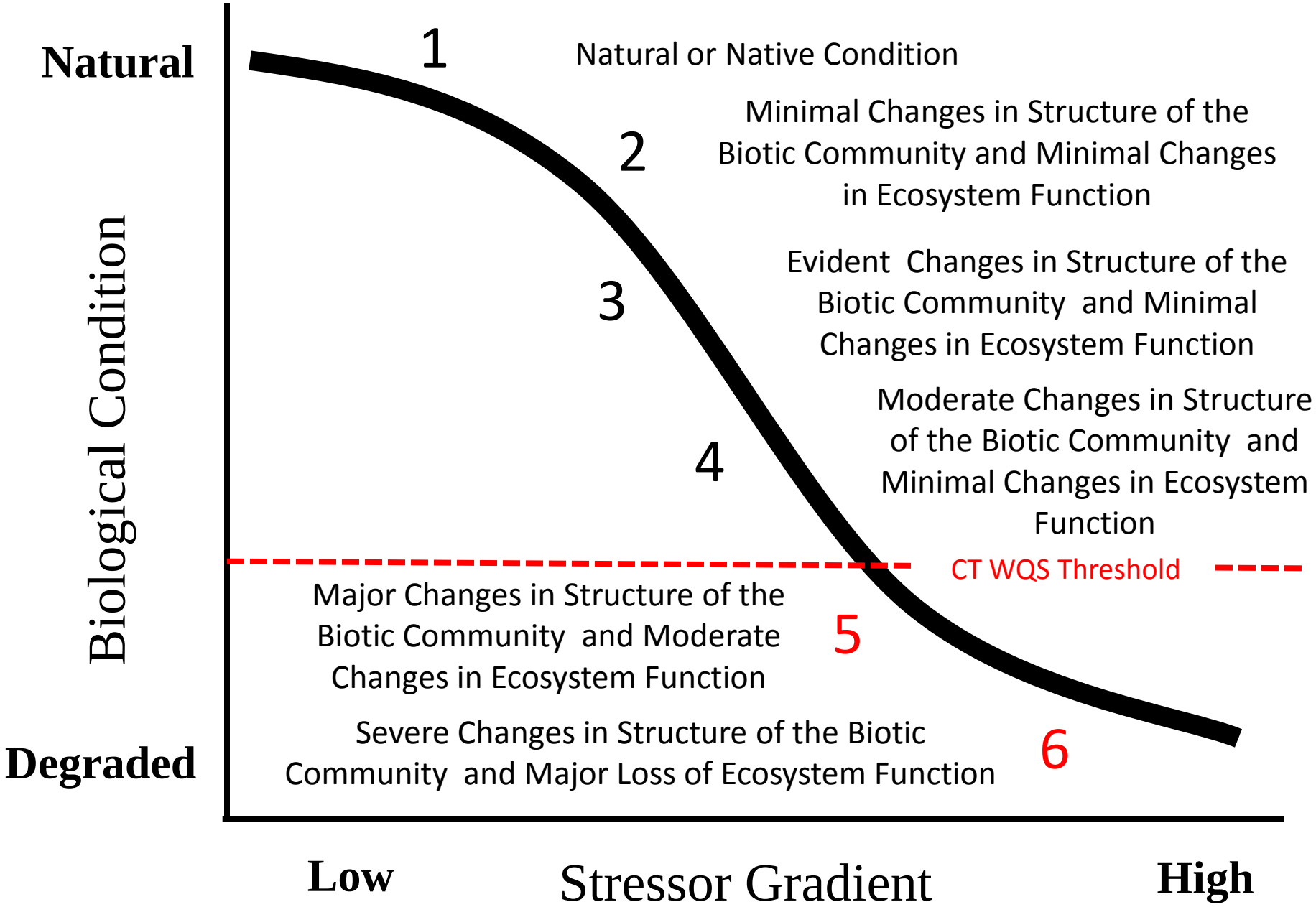
Implementation

Integrate the Biocondition Gradient approach into CT WQS

The Linkage From Stressor Effects to Ecosystem Response



STRESSORS → **EXPOSURE** → **RESPONSE**


Natural
Biological Condition
Degraded
1
Natural or Native Condition
2
Minimal Changes in Structure of the Biotic Community and Minimal Changes in Ecosystem Function
3
Evident Changes in Structure of the Biotic Community and Minimal Changes in Ecosystem Function
4
Moderate Changes in Structure of the Biotic Community and Minimal Changes in Ecosystem Function
CT WQS Threshold
Major Changes in Structure of the Biotic Community and Moderate Changes in Ecosystem Function
5
Severe Changes in Structure of the Biotic Community and Major Loss of Ecosystem Function
6
Low
Stressor Gradient
High

Biocondition Gradient

- Provides a more refined scale for assessing the condition of biological communities
- A BCG model has been calibrated for the benthic community within CT
- Other biological communities can be evaluated under a similar gradient

Designated Uses → / Classifications ↓	Existing or Proposed Drinking Water Supply	Potential Drinking Water Supply	Habitat for fish, aquatic life or wildlife	Recreation	Industrial and Agricultural Supply	Navigation
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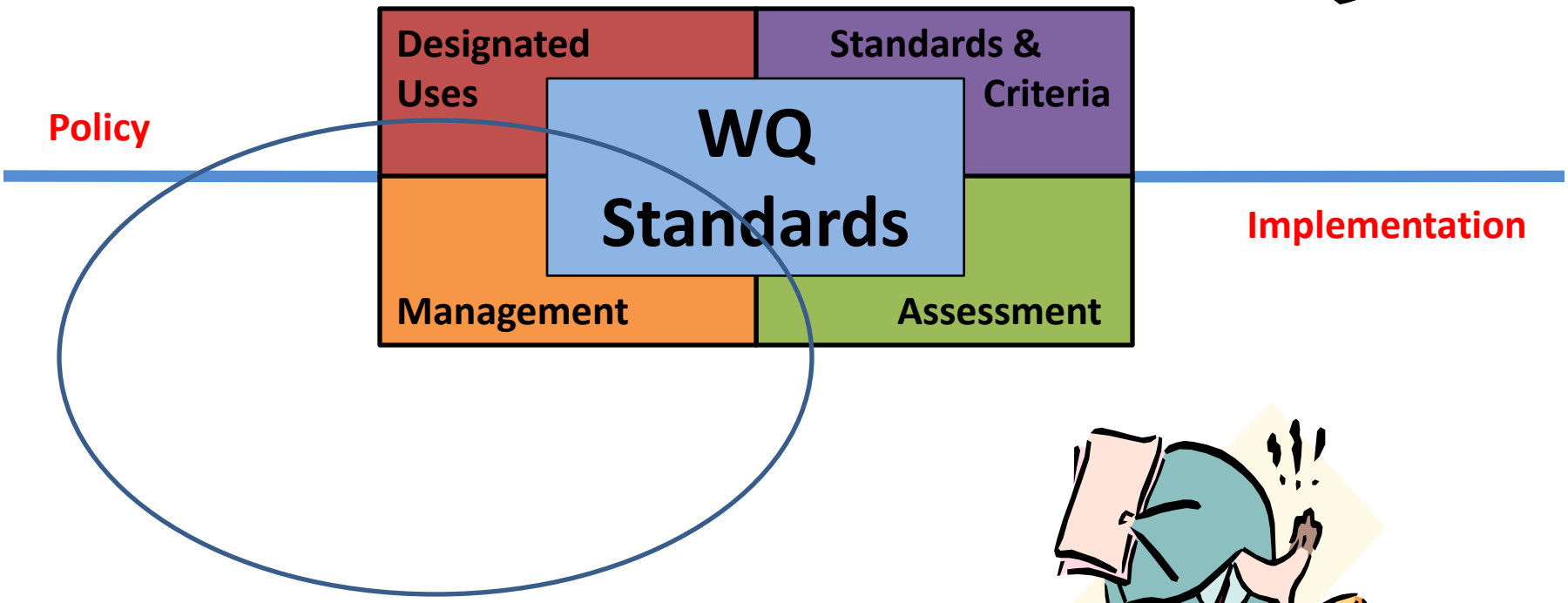


Implementation

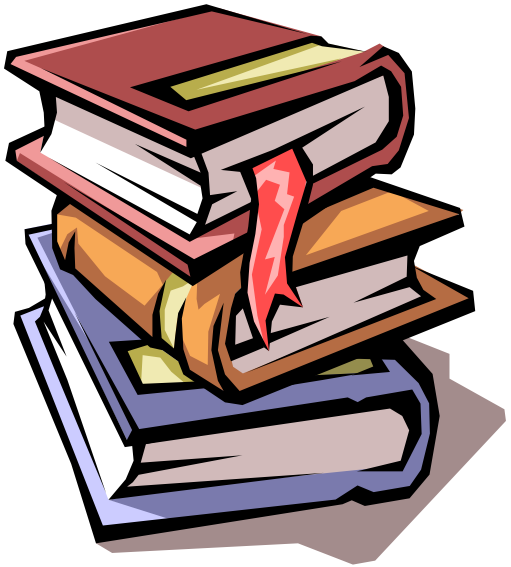
Management:

Provides information for applying water quality standards

Implementation

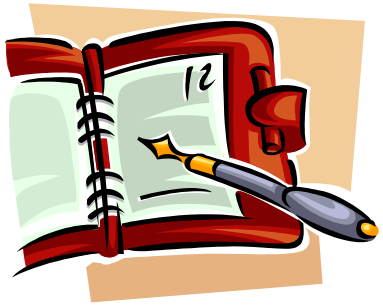
Antidegradation Policy and Antidegradation Implementation Policy:

Update Antidegradation Policy and Antidegradation Implementation Policy to address deficiencies in current policy and provide consistency with proposed changes to WQS



CT Antidegradation Policy

- Expressed in Standards 2-5 of the WQS
  - For all Waters: Maintain Minimum WQ and Designated Uses
  - For High Quality Waters: Protect and maintain higher levels of WQ unless lowering WQ is necessary to accommodate overriding statewide economic or social development
  - Protection of Outstanding National Resource Waters



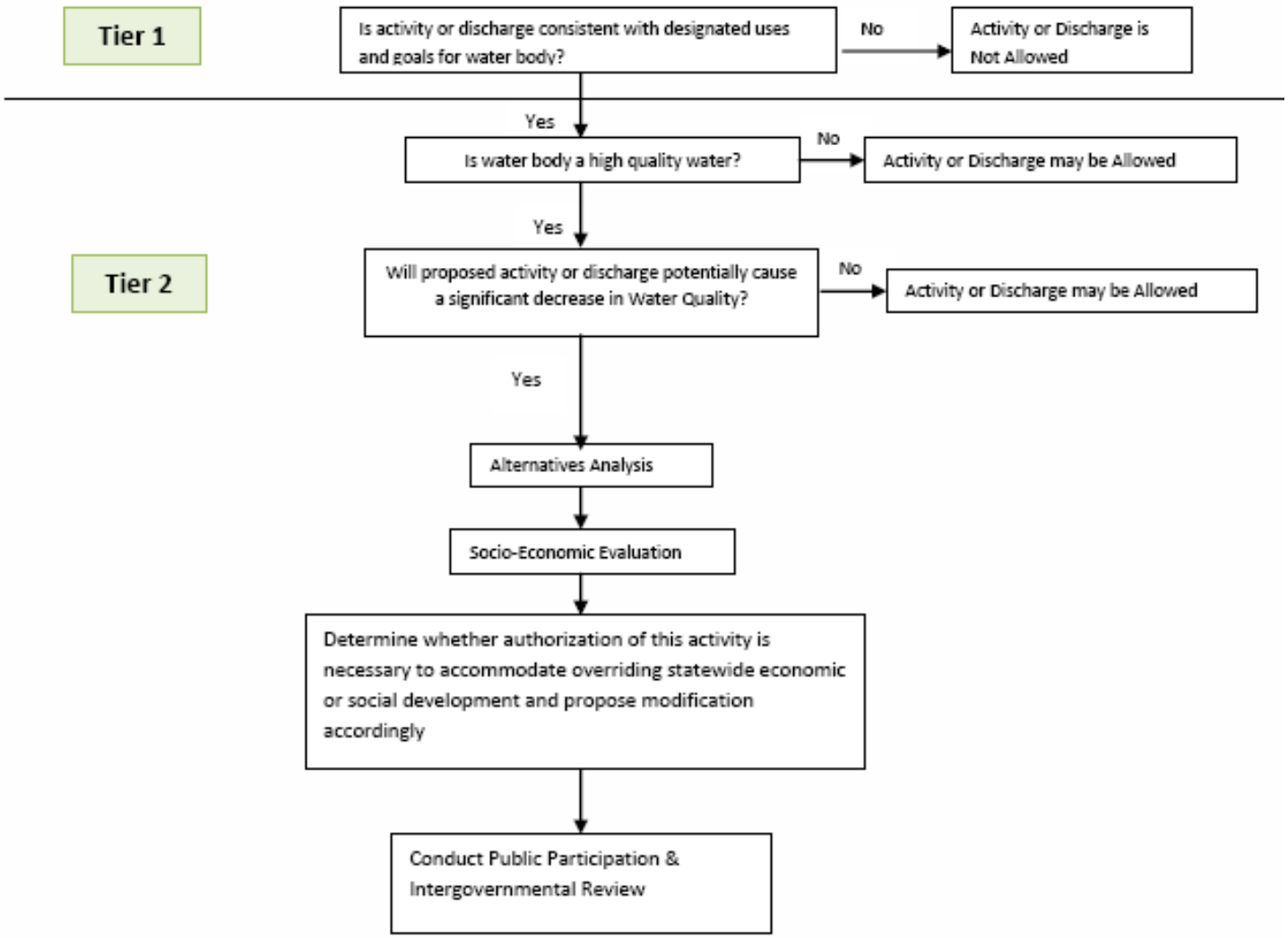
Antidegradation Implementation Policy

- Restructure Existing Policy
  - Currently Structured Based on WQ Classification
  - Revised to Reflect Tiers used by EPA
- Make Consistent with Current EPA Guidance
- Standards include general policy for how to implement
- Worked with Regulatory Program Managers and Staff during revision process

Antidegradation Tiers

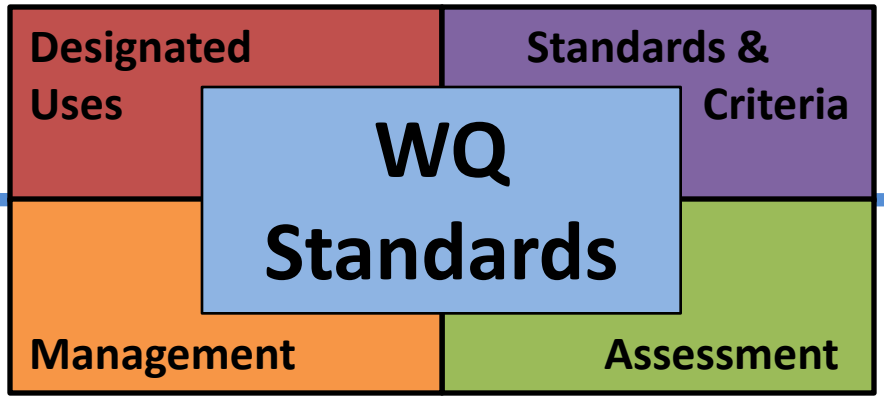
- Tier 1
  - For all Waters: Maintain Minimum WQ and Designated Uses
- Tier 2
  - For High Quality Waters: Protect and maintain higher levels of WQ unless lowering WQ is necessary to accommodate overriding statewide economic or social development
- Tier 3
  - Protection of Outstanding National Resource Waters

Tier 1 and Tier 2 Antidegradation Implementation Flow Chart:



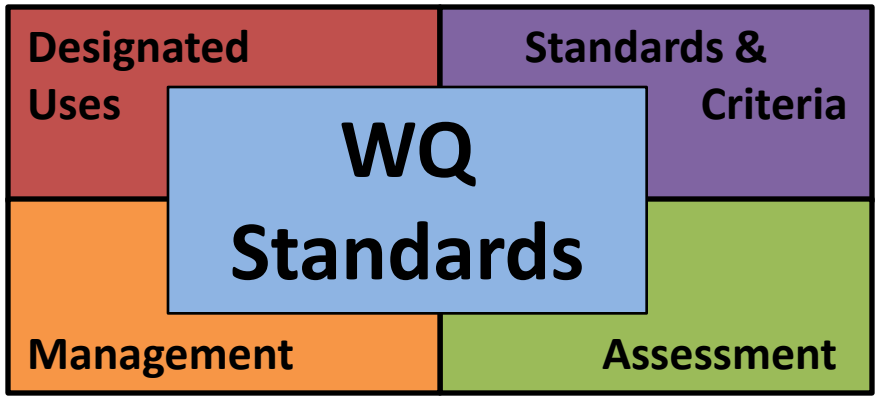
Designated Uses → / Classifications ↓	Existing or Proposed Drinking Water Supply	Potential Drinking Water Supply	Habitat for fish, aquatic life or wildlife	Recreation	Industrial and Agricultural Supply	Navigation
AA						
A						
B						
C						
D						

Policy



Implementation

How to Provide Comments on the Proposed Revisions to the WQS



Public Comment Period Closes on Monday, February 15, 2010

1. Provide oral testimony at the public hearing

2. Provide written comments during the public comment period
   - Dec 22 2009 – Feb 15 2010
   - Send original copy of written comments via mail to:

Traci Iott
CT DEP
Bureau of Water Protection and Land Reuse
79 Elm Street
Hartford, CT 06106-5127

Contact Information:

Call with questions:

Traci Iott
860 424 3082

Submit Written comments:

Traci Iott
CT DEP
Bureau of Water Protection and Land Reuse
79 Elm Street
Hartford, CT 06106-5127