COMPREHENSIVE EVALUATION OF SYSTEM RESPONSE (CESR) to Water Quality Management Efforts, Part 2
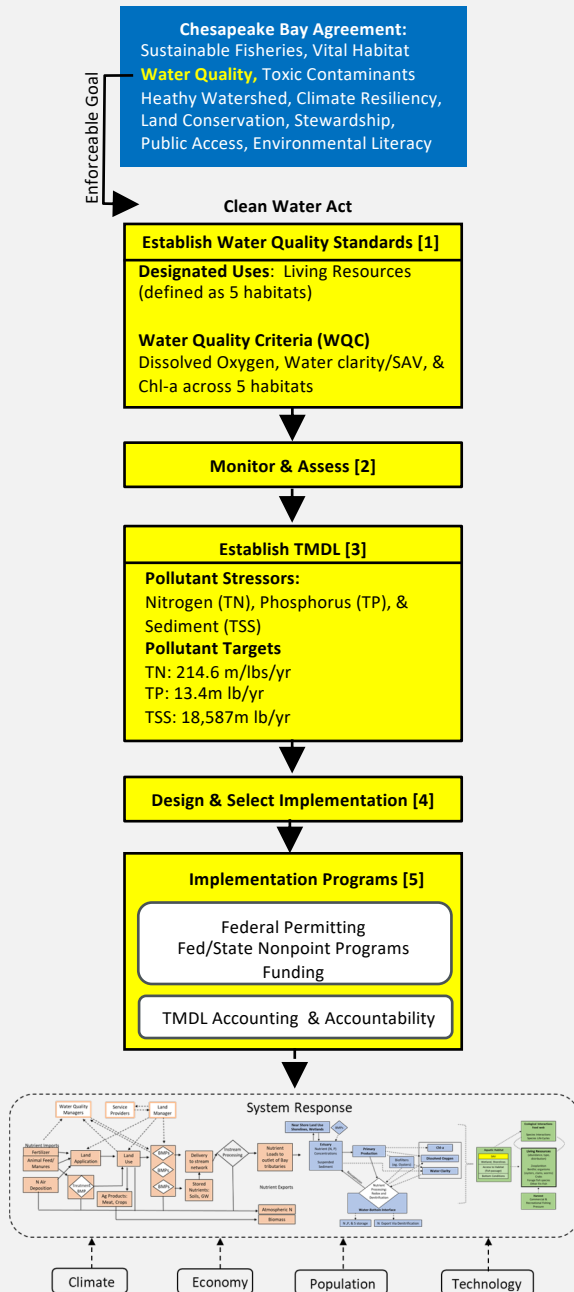
Chesapeake Bay Commission
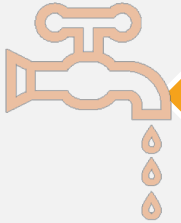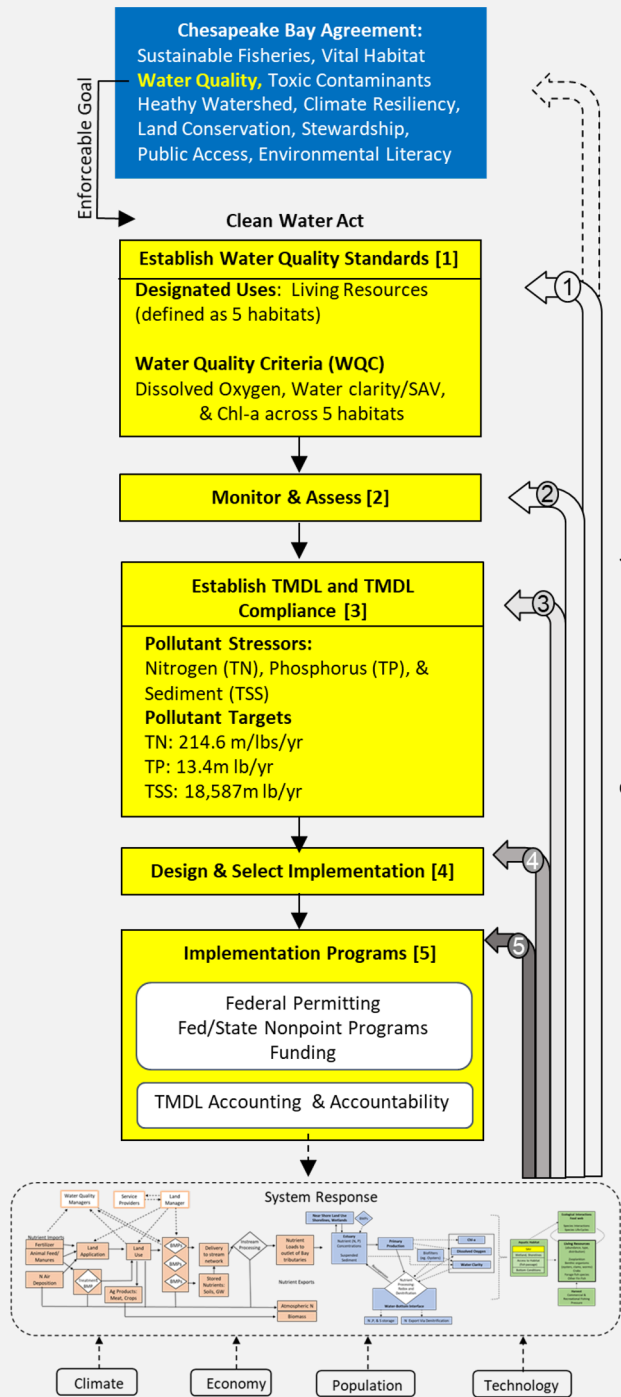18 November 2022

Two Premises

- Achieving our desired outcomes is proving more challenging than we expected.
- There are opportunities to improve our effectiveness, but they will require a significant change in our thinking and our programs.

Chesapeake Bay Agreement:
Sustainable Fisheries, Vital Habitat
Water Quality, Toxic Contaminants
Heathy Watershed, Climate Resiliency,
Land Conservation, Stewardship,
Public Access, Environmental Literacy

Enforceable Goal

Clean Water Act

Establish Water Quality Standards [1]

Designated Uses: Living Resources
(defined as 5 habitats)

Water Quality Criteria (WQC)
Dissolved Oxygen, Water clarity/SAV, &
Chl-a across 5 habitats

Monitor & Assess [2]

Establish TMDL [3]

Pollutant Stressors:
Nitrogen (TN), Phosphorus (TP), &
Sediment (TSS)
Pollutant Targets
TN: 214.6 m/lbs/yr
TP: 13.4m lb/yr
TSS: 18,587m lb/yr

Design & Select Implementation [4]

Implementation Programs [5]

Federal Permitting
Fed/State Nonpoint Programs
Funding

TMDL Accounting & Accountability

System Response

Climate

Economy

Population

Technology

SUMMARY OF FINDINGS

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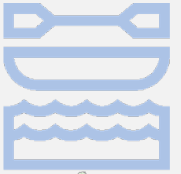
System Response

Climate   Economy   Population   Technology

- *Uncertain if it is possible to achieve water quality criteria (DO, SAV), but efforts have stemmed further declines in water quality.*
- *Existing nonpoint source water quality programs are insufficient to achieve the nonpoint source reductions required by the TMDL*
- *It might not be possible to meet the all TMDL and WQ goals but this may not be necessary to enhance and support living resource goals.*
- *The existing adaptive management process has limited capacity to effectively address the uncertainties and response gaps described in this report.*
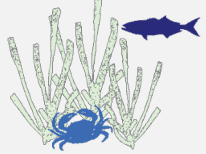
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Feedback for Policy Assessment and Change

① ② ③ ④ ⑤

System Response

Climate   Economy   Population   Technology

Implications

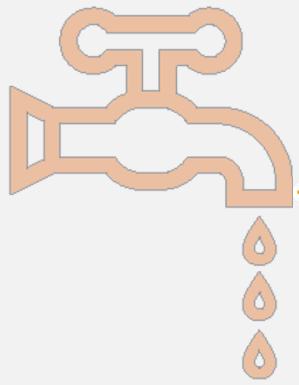**Improving effectiveness of nonpoint source management programs**

Improving living resource response to water quality management efforts
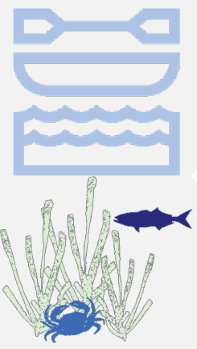
Expand adaptive management

Improving effectiveness of nonpoint source management programs
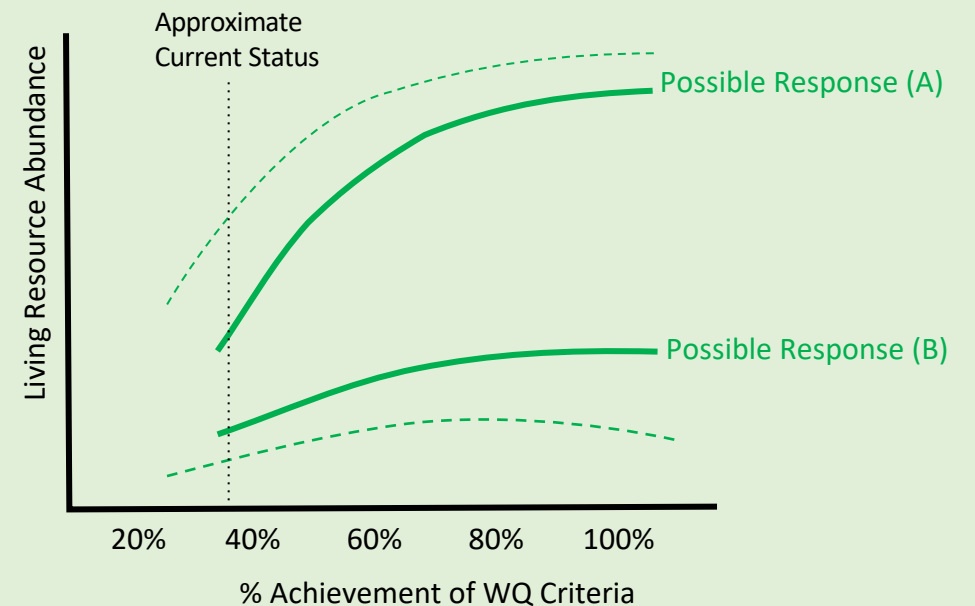
- Spatial targeting

- Outcomes-based incentive programs

- Targeted, performance-based requirements

- Facilitating policy innovation through "sandboxing"

Improving living resource response to water quality management efforts

- Expression of the criteria can be shifted to more accurately reflect necessary conditions for habitat suitability (value, mode, how and where measured)

- Achievement of TMDL targets could be prioritized according to location (segments) or habitat type.

- Addition of management actions to elevate LR response to WQ management efforts.

Possible Living Resource Responses to Existing Water Quality Standards

Approximate Current Status

Living Resource Abundance

Possible Response (A)

Possible Response (B)

20% 40% 60% 80% 100%

% Achievement of WQ Criteria

Expand adaptive management

- Expanded AM will need to include all levels of policy feedback and learning in the existing CWA approach (arrows 1 through 4).
  - Who?
  - How?
- Now is an opportunity to developed expanded adaptive management processes

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Climate Economy Population Technology