Chesapeake Bay: State of the Science 2025

Potential Proactive STAC Assessment Effort

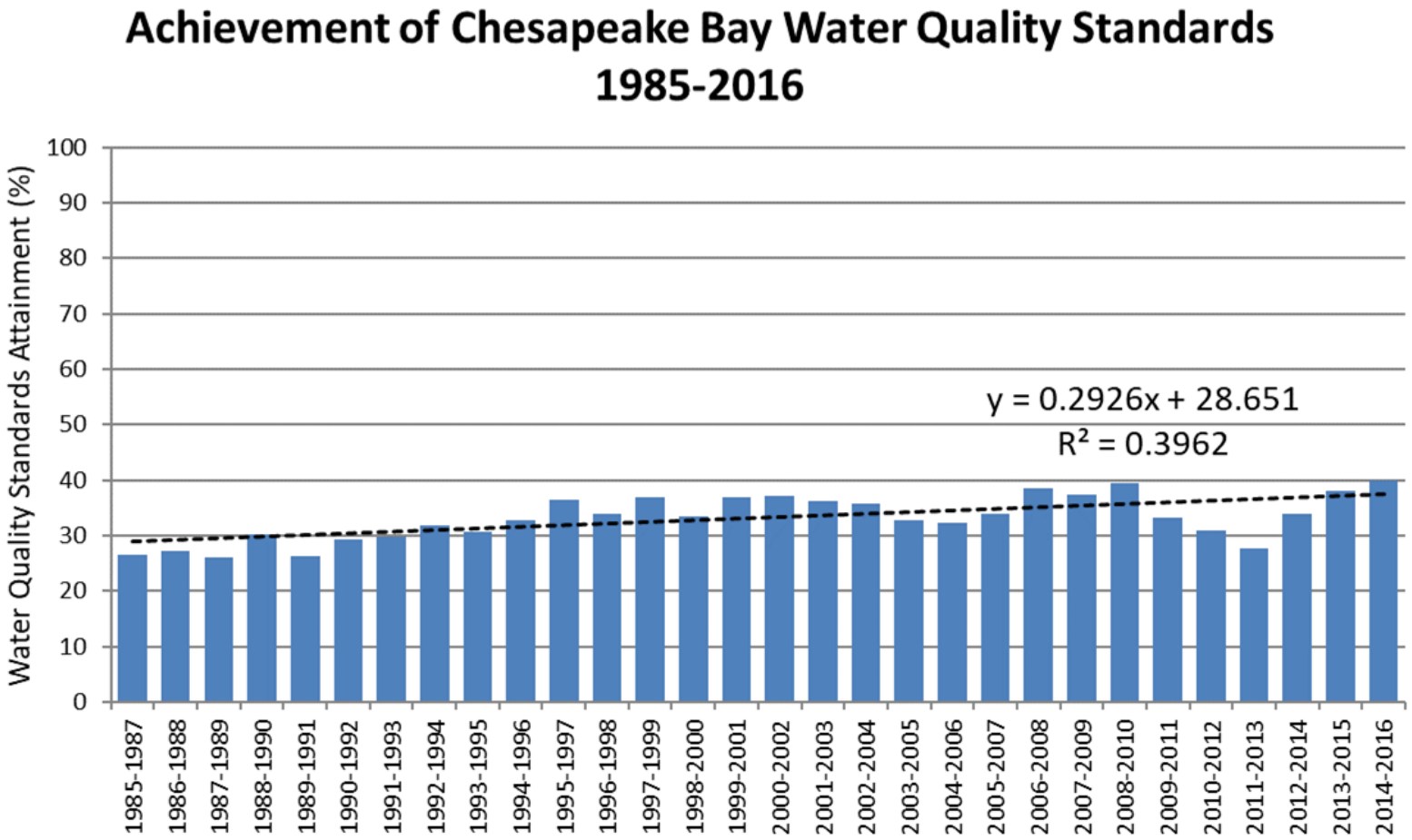
Chesapeake Bay: State of the Science 2025

Engage STAC to generate a consensus report that assess the level of confidence in existing and future management efforts to achieve existing water quality standards.

1. Are management efforts (current and planned) sufficient to achieve target nutrient/sediment load reductions (delivered, not modeled)?
2. If current nutrient/sediment load reduction goals are achieved, will those reductions be sufficient to achieve existing water quality standards?
3. Identify the level of confidence in existing and future management efforts to achieve water quality standards and assess the potential of alternative management policies to improve the probability of achieving water quality standards.
4. Assess the consequences for living resources if existing water quality standards can not be attained.

Background

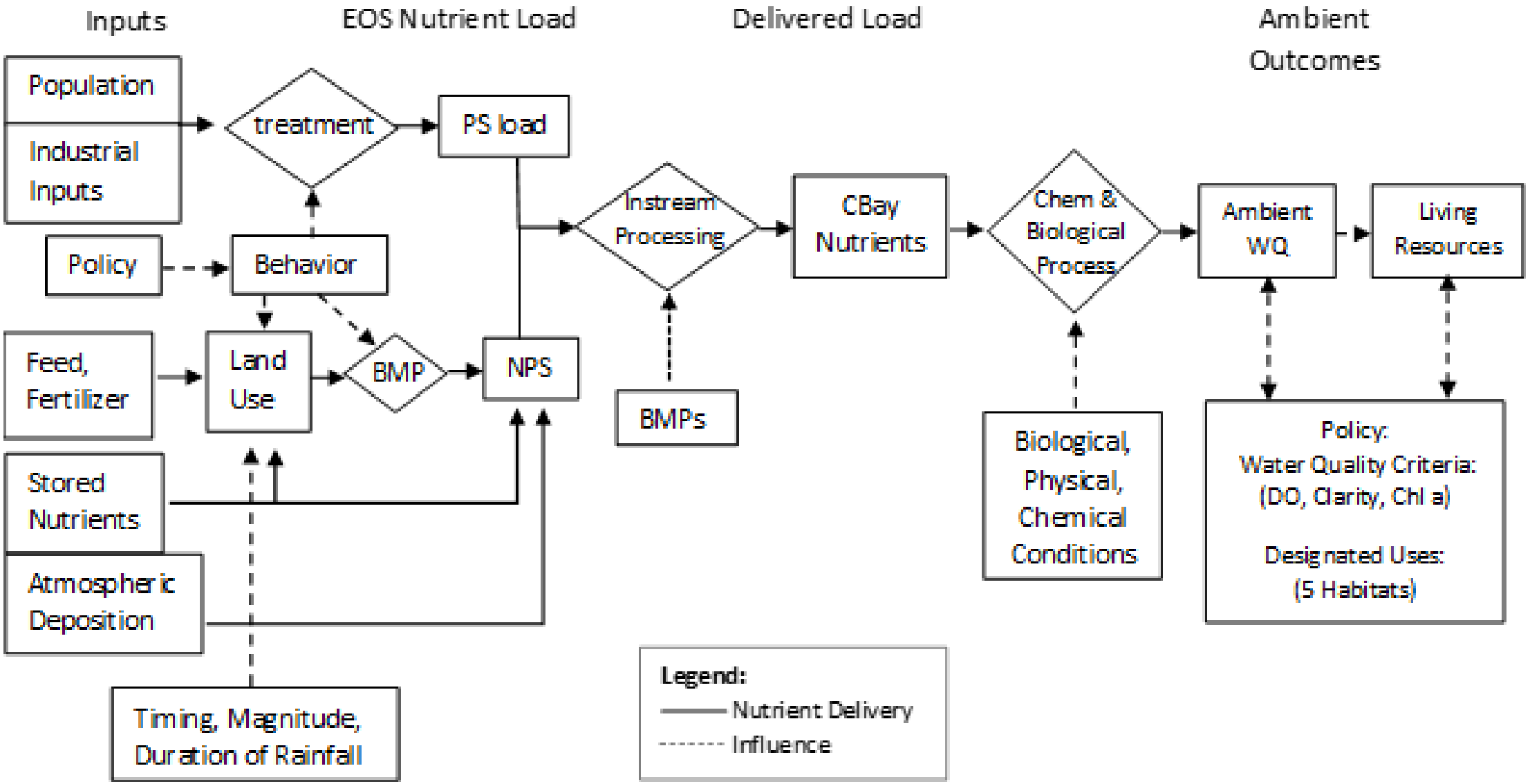
- Unlikely to meet the target nutrient and sediment load reductions required by the total maximum daily (TMDL) by 2025.
- Attainment of WQ standards (water quality criteria and specified designated uses) remains distant possibility.



Motivation

- Substantial divergence exists between expected and measured outcomes in the Bay's response to management actions and system stressors.
- Possible reasons for divergences:
  - limitations in the Chesapeake Bay Program's (CBP) suite of models,
  - inadequate behavioral responses to existing policies,
  - scientific uncertainty surrounding system response, and
  - fundamental shifts in the trophic state of the estuary.
- STAC can is uniquely able to…
  - Identify gaps in existing science, data, and management efforts that may help reduce the divergence, and
  - Provide insights as to whether the physical, chemical, biological, and behavioral system can sufficiently respond to management actions to attain the desired end states (i.e., achieving existing water quality standards).

Conceptual Bay system



Management implications…

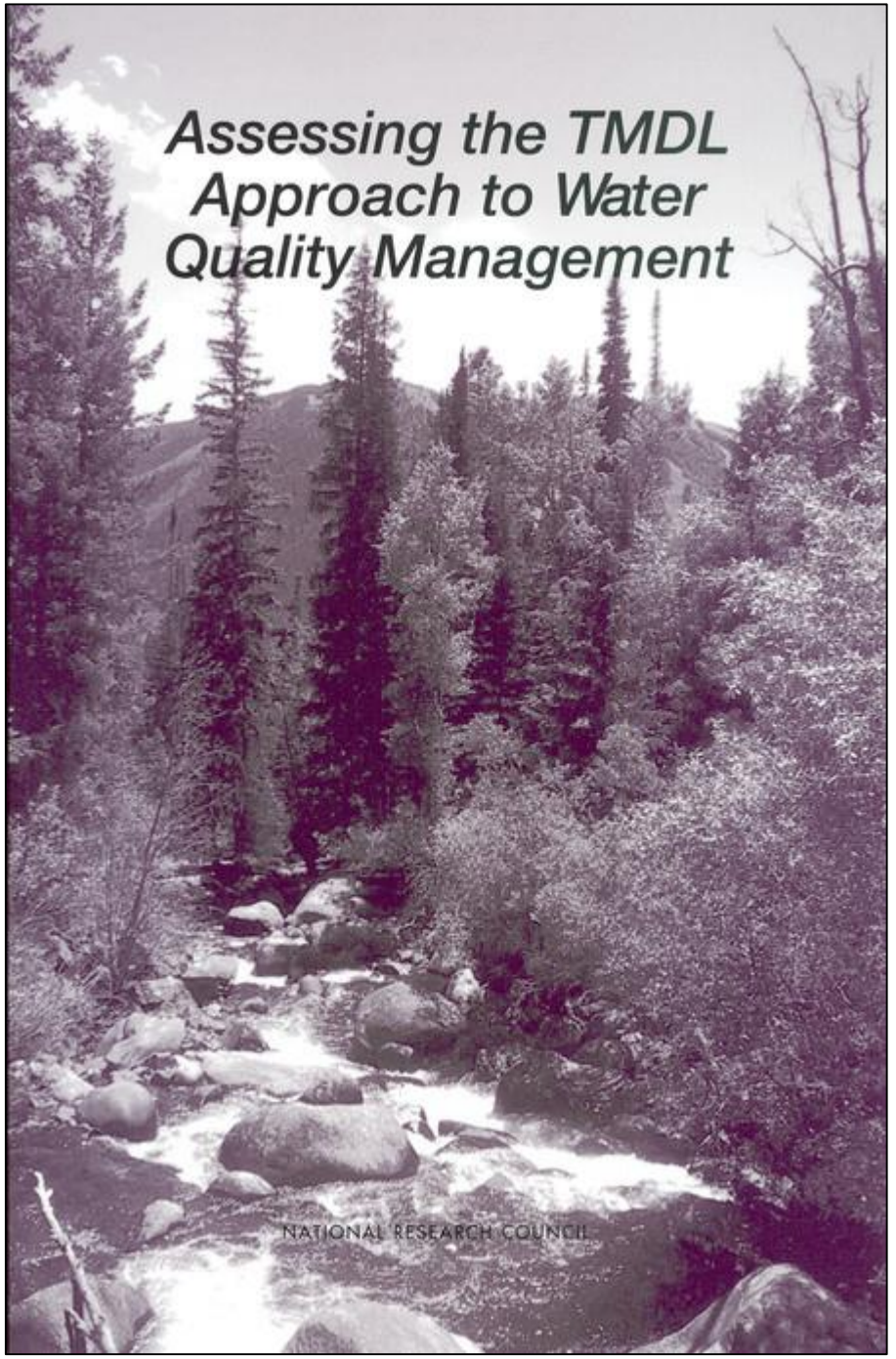
- If Partnership achieves TMDL targets but does not attain WQS, to what extent will additional reductions help? What are the costs, risks and incremental gains of additional reductions?
- Has the Bay ‘system’ changed in such a way that prevents attainment of WQS? What is the impact on living resources for failure to achieve existing WQ criteria and what are the consequences of alternative WQS (criteria and designated uses)?
- What key analytical/experimental investments suggested by an adaptive management approach are needed to improve our collective understanding of system response to management actions?

Opportunity to…

- Work together on a common task.
- Engage STAC’s breadth of expertise.
- Involve STAC’s extended expertise networks.
- Leverage STAC’s experience and history (reviews/workshops).
- Seize the moment following the mid-point assessment and prepare for 2025 and beyond.
- Speak to the future of what is possible from a science perspective in a coherent, coordinated, unified voice.

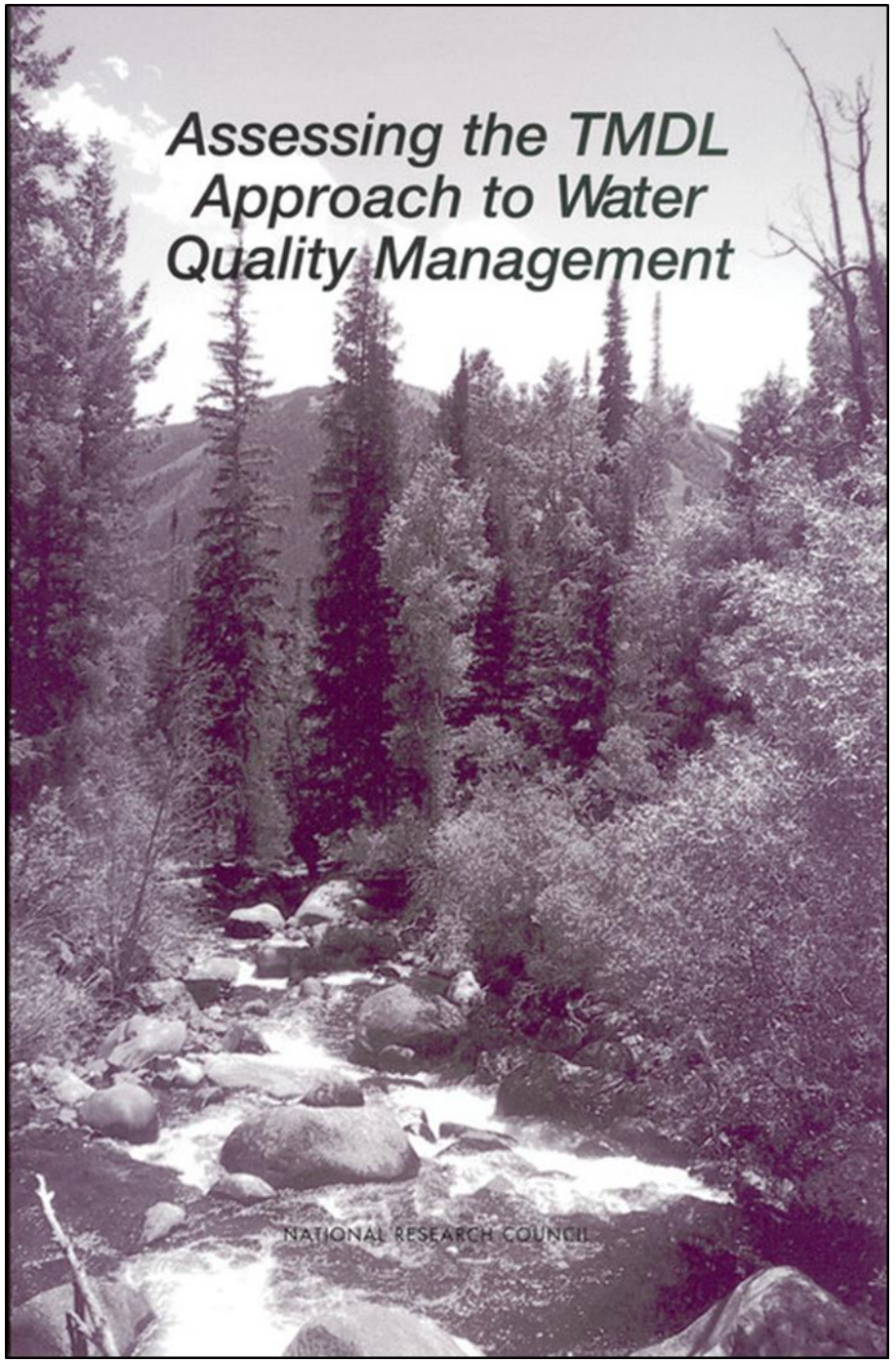
Product

- STAC-authored report
- Treatment of specific scientific issues that may prevent the Bay system from attaining stated outcomes
- Identify key knowledge gaps/uncertainties and limits on system response
- Synthesis not summary or comprehensive lit review
- Condensed, focused
- Strive for STAC consensus

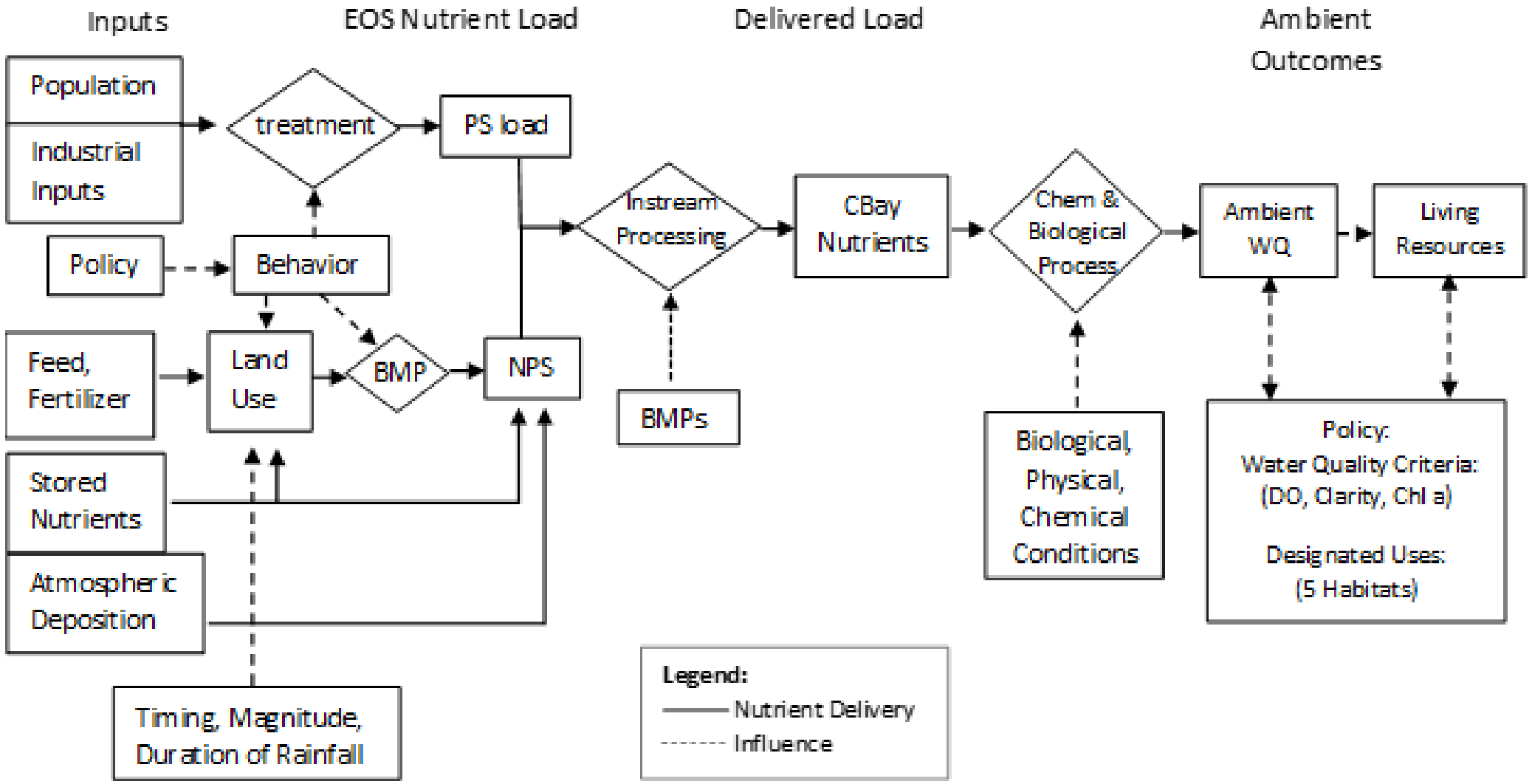


Process

- NRC model
- STAC membership reviews and identifies key issues/focus areas
- Devote blocks of time at quarterly meetings to discuss/investigate
- STAC members contribute text for the final report
- Small steering committee to coordinate activities
- Limited resources available to bring in external expertise, if needed



Conceptual Bay system… Tomorrow



1. **Are management efforts (current and planned) sufficient to achieve target nutrient/sediment load reductions (delivered, not modeled)?**
    a. Identify key scientific gaps in understanding system response.
    b. Identify limitations in system responses that pose risk to achievement of desired changes in pollutant load.
    c. Identify and prioritize recommendations to address scientific uncertainties and risks.

2. If current nutrient/sediment load reduction goals are achieved, will those reductions be sufficient to achieve existing water quality standards?

a. Identify key scientific gaps in our understanding of system response to changing nutrient loads.

b. Identify limitations in system responses that pose a risk to achievement of desired water quality conditions.

c. Identify and prioritize recommendations to address scientific uncertainties and risks

3. Identify the level of confidence in existing and future management efforts to achieve water quality standards and assess the potential of alternative management policies to improve the probability of achieving water quality standards.

a. To what extent will additional reductions in pollutant loads help?

b. Do other system stressors and system dynamics prevent attainment of existing water quality standards?

4. Assess the consequences for living resources if existing water quality standards can not be attained.

a. What are the implications for living resources for setting new/alternative water quality standards?