Chesapeake Bay Program
Science. Restoration. Partnership.

FWG

E3 and No-Action Scenario Overview

Auston Smith
Chesapeake Bay Program Office; EPA

2/4/26

Chesapeake Bay Program
Science. Restoration. Partnership.

E3 and No-Action: TMDL Appendix J

This appendix to the Chesapeake Bay TMDL offers definitions for the different modeling scenarios initially used for the development of controllable loads and partner allocations.

Examples of scenarios used in the past to help produce planning targets:

- 1985 No-Action
- 2010 No-Action
- All Forests
- Tributary Strategy
- E3
- Etc.

American avocets can be found living in open areas with little vegetation and shallow waters. (Photo by Marielle Scott/Chesapeake Bay Program)

Chesapeake Bay Program
Science. Restoration. Partnership.

E3 and No-Action: Controllable Loads

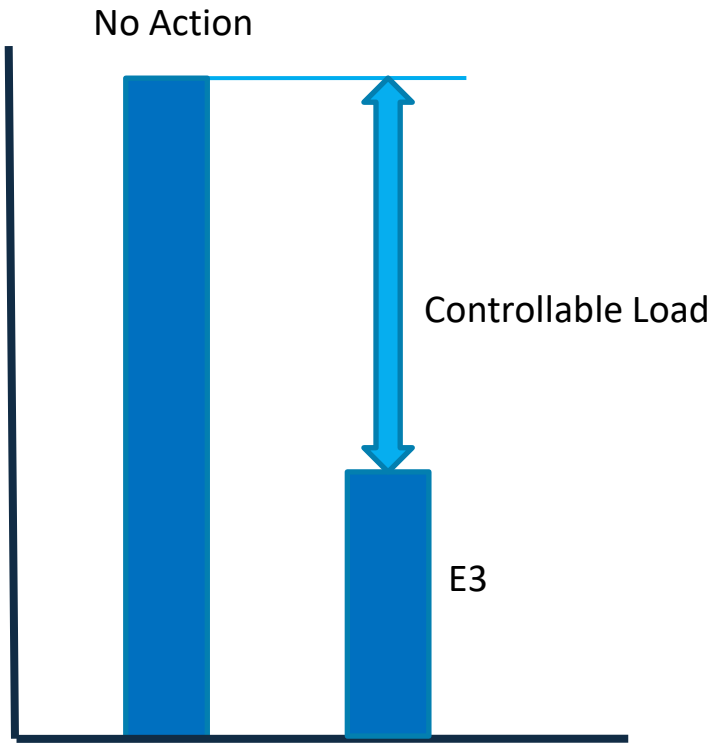
[Chesapeake Bay TMDL Section 6: Establishing the Allocations For The Basin-Jurisdictions]

Section 6.3.2: Determining Controllable Loads

Two theoretical scenarios are created to determine the appropriate context for controllable loads (the difference between these two scenarios' loads).

1. **The No-Action scenario** is indicative of a theoretical worst case loading situation in which no controls exist to mitigate nitrogen, phosphorus, and sediment loads from any sources.

2. **The E3 scenario** represents everything by everyone everywhere—represents a theoretical best-case possible situation, where a certain set of possible BMPs and available control technologies are applied to land, given the human and animal populations, and wastewater treatment facilities are represented at highest technologically achievable levels of treatment regardless of costs.



Chesapeake Bay Program
Science. Restoration. Partnership.

E3 Overview

The E3 Scenario is an estimate of the application of management actions … with the theoretical maximum practicable levels of managed controls on all pollutant load sources. Generally, E3 scenario implementation levels and their associated reductions in nutrients and sediment could not be achieved for many practices, programs and control technologies.

Used alongside the No-Action scenario, this calculation of controllable loads will address all three rules for determining Planning Targets:

- Planning Targets must meet water quality standards
- Those that pollute more should do more.
- Actions already taken count toward the goals.

Eastern brook trout swim at the Virginia Living Museum in Newport News, Va., on Dec. 30, 2018. (Photo by Will Parson/Chesapeake Bay Program)

Chesapeake Bay Program
Science. Restoration. Partnership.

Points to Consider

Planning targets are within the range of loads between the No-Action and E3 are for all sources in an area. They do not determine the amount needed from each sector to reach the planning targets.

Using the same methodology does not mean no changes were made, as relative effectiveness of basins and current land use assumptions did change based on current science and other updates planned for the model.

Scarlet oak during fall. (Photo courtesy of Ashley M Bradford/iNaturalist CC BY-NC, cropped)

Chesapeake Bay Program
Science. Restoration. Partnership.

WQGIT and Sector Workgroup Decisions:

- Scenario (E3) Inputs- where can practices go, at what % of that land use, and how does that conflict (if at all) with other proposed inputs?

- Scenario Base Year –what base year should be utilized for the scenarios. 2010 was used in the past in both 2010 and 2017.

- Phase III WIP – review these planning efforts and does anything else need to be done to achieve WQS?

Chesapeake Bay Program
Science. Restoration. Partnership.

Phase 6 E3 Forestry Practices
Inputs:

NATURAL SECTOR:

- 100% Timber harvest BMP implementation. It was also assumed that forestry BMPs designed to minimize the environmental impacts from timber harvesting , such as road building and cutting/thinning operations, are properly installed on all harvested lands.

AGRICULTURE SECTOR:

- Forest Buffers: Applied to 6% of cropland within 30m of all streams and rivers that's unbuffered
- Forest Buffers with exclusion fencing: Applied to 5% of pastureland within 30m of streams/rivers
- Tree Planting: 1% of available crops and pasture.

DEVELOPED SECTOR:

- No net loss of forest.
- 10% net gain and/or 2,400 acres of additional tree canopy.

Chesapeake Bay Program
Science. Restoration. Partnership.

E3 Forestry Practices Questions and Considerations:

NATURAL SECTOR:

- Confirm we are maintaining 100% forest harvesting BMPs on harvested forest land

AG SECTOR:

- Forest buffers: Land is bufferable out to 300 ft now; not 30m. How does this possibly change the approach for analysis of what is bufferable? Areas needed for exclusion? What hydrography do we use? What % of cropland and pasture land should be buffered?
- Tree planting: How much crop/pastureland should be planted? Maintain 1%?

DEVELOPED SECTOR:

- No net loss: Is this only true forest or trees present overall?
- Urban Forest Buffers: Building exclusion from bufferable domain? USWG consideration from Phase 6 E3.
- Tree and forest planting: What % of turf should be converted to trees? Breakdown of tree planting vs forest planting

CONSIDERATIONS FOR ANALYSES NEEDED:

- Ag+forestry total land use change not to exceed 15%
- Use Hyper Res or 1:24K land use to make assumptions about pipes, ditches, and ephemeral streams to determine what is a riparian area vs not and what domain is “bufferable”?
- Can we leverage the plantable space analysis?

Chesapeake Bay Program
Science. Restoration. Partnership.

No-Action and E3 Discussions Timeline for Review and Completion

Initial Input Overview and Discussions:

- **WQGIT/AgWG already had overview discussion**
- **Forestry WG:** 2/4/26 (Today!)
- **Urban Stormwater WG:** 2/17/26
- **Wastewater Treatment WG:** 2/26/26

Timeline:

- 6-8 month review window (similar to Phase 6 review timeline) to complete scenario and inputs before 2027.
- March/April for next call
- Healthy Landscapes Meeting at this time may be appropriate to include larger group and GIS Team for insight on next steps and beneficial analyses.

Thank you!

Questions?

Chesapeake Bay Program
Science. Restoration. Partnership.