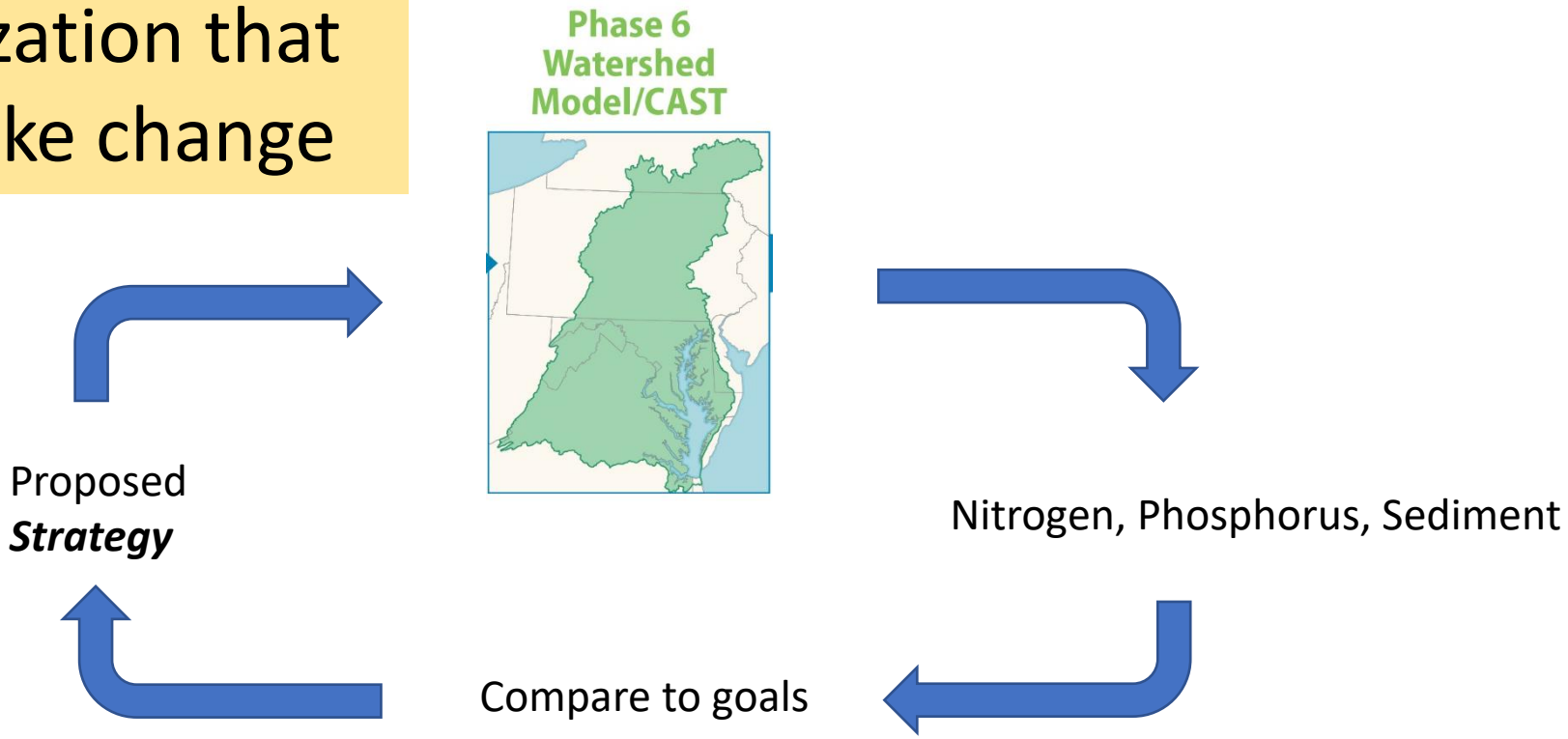
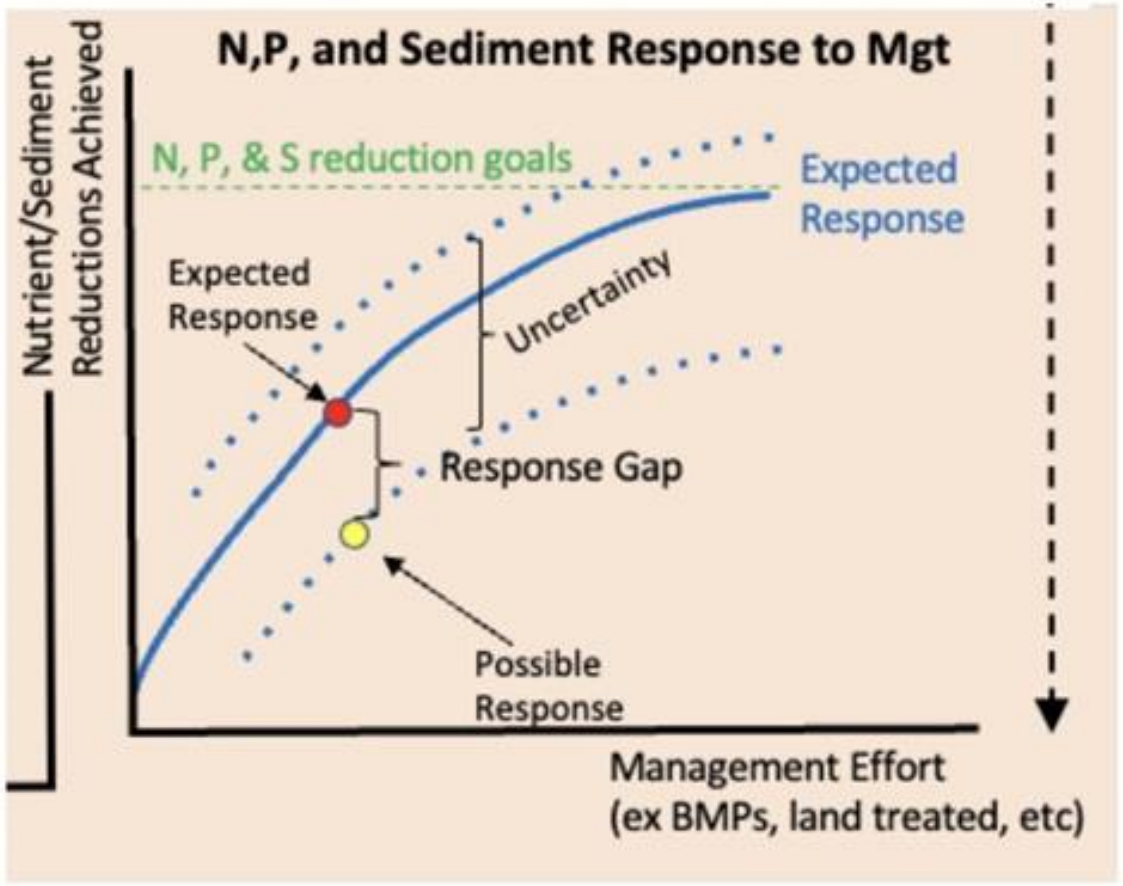
CAST – “The Bay Model” General Use Case

Organization that can make change



STAC Comprehensive Evaluation of System Response Report



- Presented to WQGIT 10/26/2021
- https://d18lev1ok5leia.cloudfront.net/chesapeakebay/documents/cesrtowqgit10-26-2021_final.pdf

Chesapeake Governance Study: Report of 2021 Decision Maker Interview Results D.G. Webster, Dartmouth College

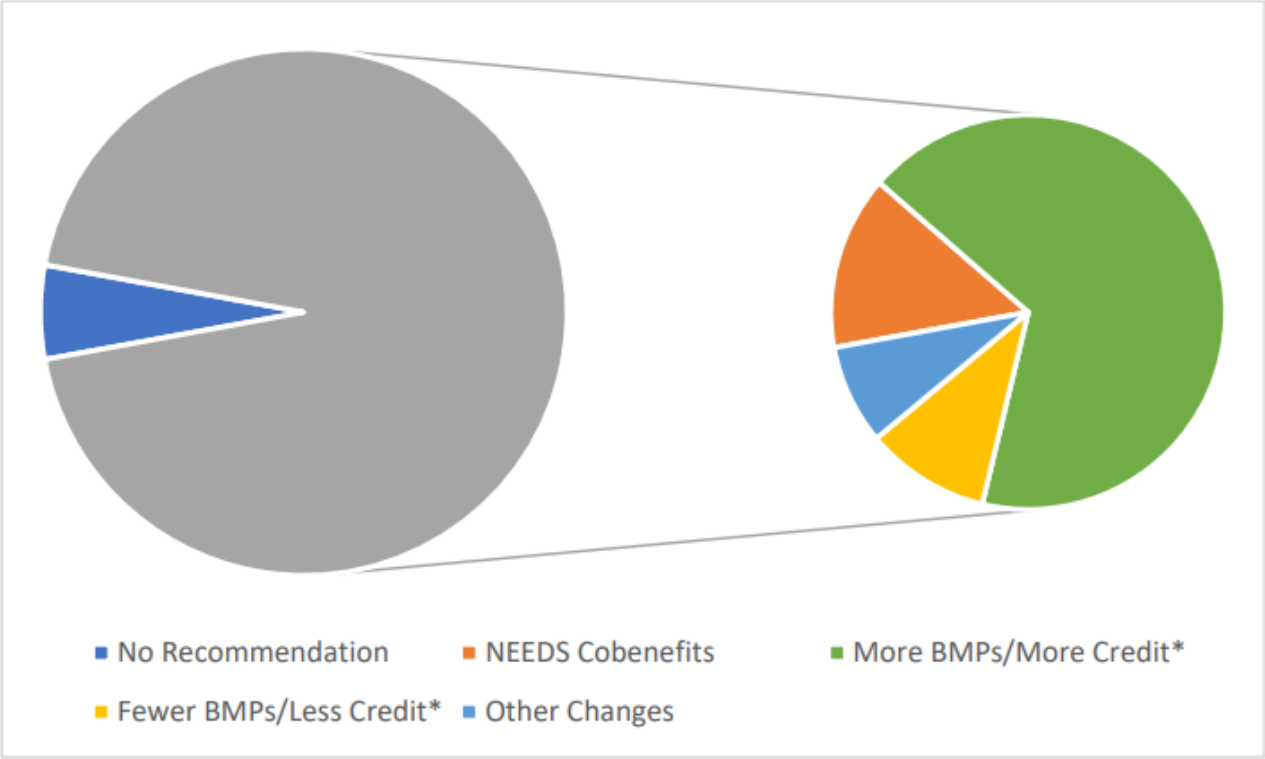


*Figure 71: Proposed "Improvements" to Models (# Mentions; * Indicates summary of information from previous sections). Most responses that criticized the Model also provided suggestions for changes that respondents deemed improving. Of these, adding more BMPs or giving existing BMPs more credit for load reductions was the most common. Many fewer responses indicated that CAST should include fewer BMPs or reduce credits for loading for some BMPs. Both of these categories are a reiteration from previous sections. Suggestions not covered elsewhere were less numerous. A number of responses did indicate that adding Co-benefits to CAST would be useful.*

Examining anthropogenic changes in load

long-term data
empirical models
CAST
process models
lag estimates

Qian Zhang
Gopal Bhatt
Isabella Bertani

Chesapeake Bay TMDL Indicator (Non-Tidal Network Stations)

* This APP is designed for visualizing the monitored load trend and CAST-estimated load trend for the Chesapeake Bay Non-Tidal Network (NTN) stations.
* This APP contains data for 83, 66, and 66 stations for Total Nitrogen (TN), Total Phosphorus (TP), and Suspended Sediment (SS), respectively.
* This APP is frequently updated based on comments and suggestions received from the Chesapeake Bay Program partnership.

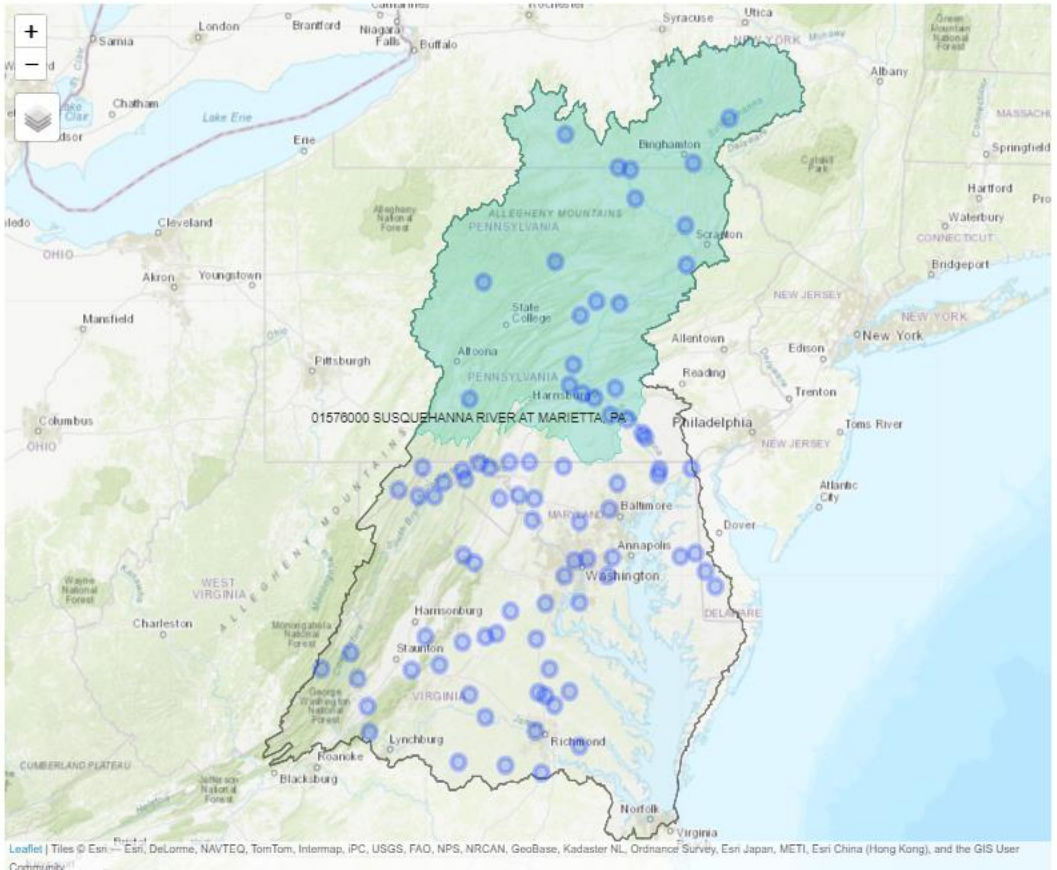
Step 1: Select the water-quality parameter:

(•) Total Nitrogen ( ) Total Phosphorus ( ) Suspended Sediment

Step 2: Select the monitoring station by clicking either Map or Table:

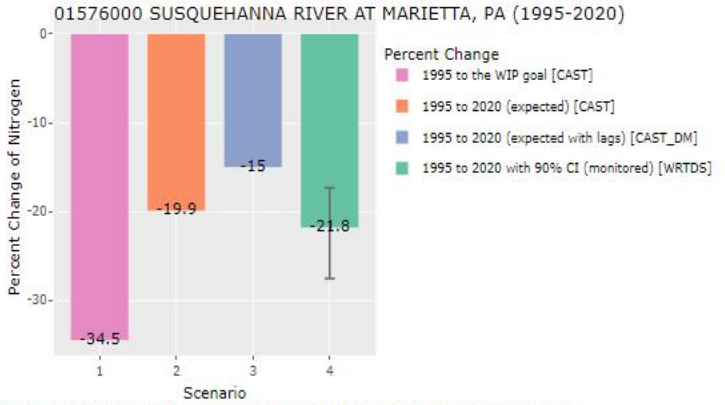
Map | Data Table

Tip: Move mouse cursor to any circle marker to show the station name.



About | Timeseries | WIP Goal | Progress | Download

Interactive Plot



(Note 1: Negative values indicate load reductions; positive values indicate load increases.)

(Note 2: To obtain values in million pounds (Mlbs), multiply the percent change shown in this plot by the CAST load in the first year of the assessment period, which is available in the Data Table under the About tab.)

Data Type

WRTDS: Monitored load - computed using the USGS WRTDS flow-normalization method (source).

CAST: Expected load in the long term - computed using the Chesapeake Bay Program Watershed Model (source).

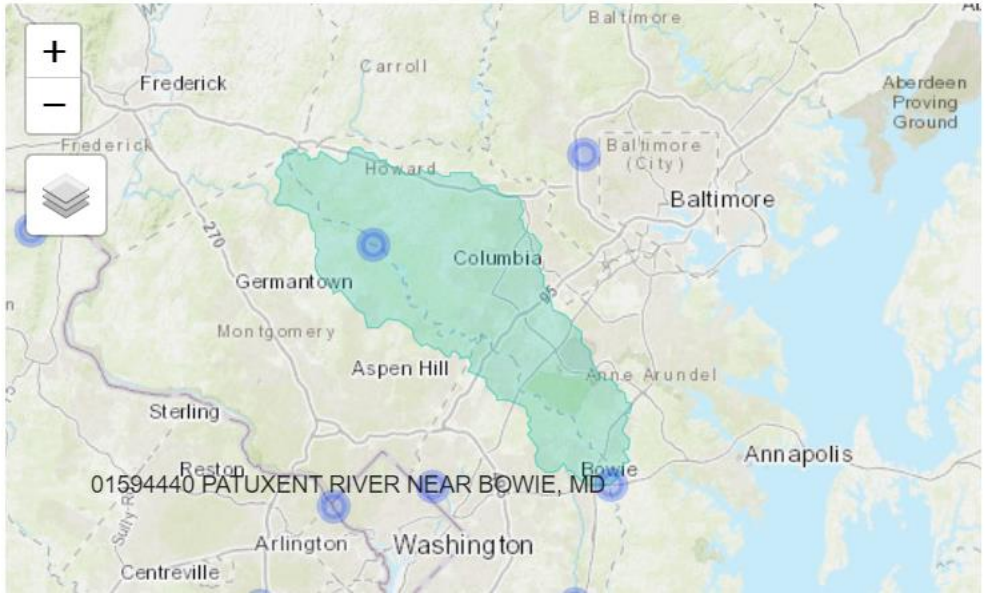
CAST_DM: Expected load with lags - computed using the Chesapeake Bay Program Watershed Model (source).

Interpretive Text

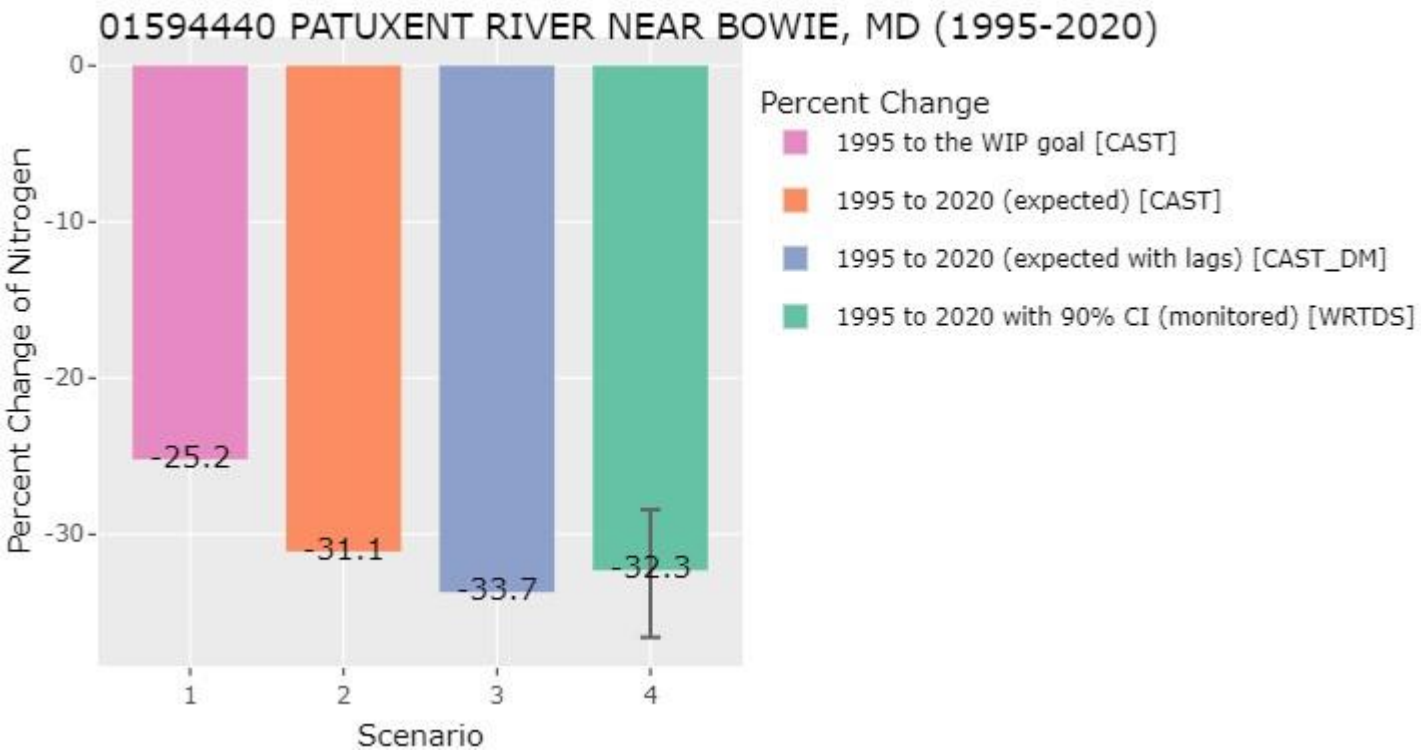
For Nitrogen at 01576000 SUSQUEHANNA RIVER AT MARIETTA, PA, the period of analysis is 1995-2020.

1. Overall reduction - comparing the baseline year of 1995 with the WIP goal:
[Bar 1] A reduction of 34.5 percent is required to meet the WIP goal, as estimated by CAST.

2. Current progress - comparing the baseline year of 1995 with the current year of 2020:
[Bar 2]: A reduction of 19.9 percent is estimated by CAST; this is the eventual (long-term) trend under the 2020 conditions of sources, implementations, and land uses.
[Bar 3]: A reduction of 15 percent is estimated by CAST_DM; this is the expected trend with lags and other factors.
[Bar 4]: A reduction of 21.8 percent is estimated by WRTDS; this is the observed trend based on the monitoring data. The estimated 90% confidence interval for this trend is (-27.6%, -17.3%).

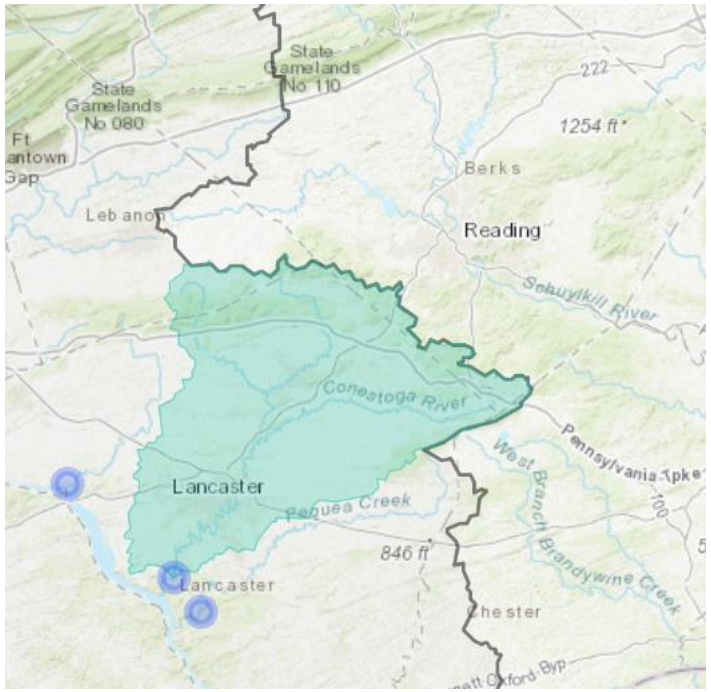


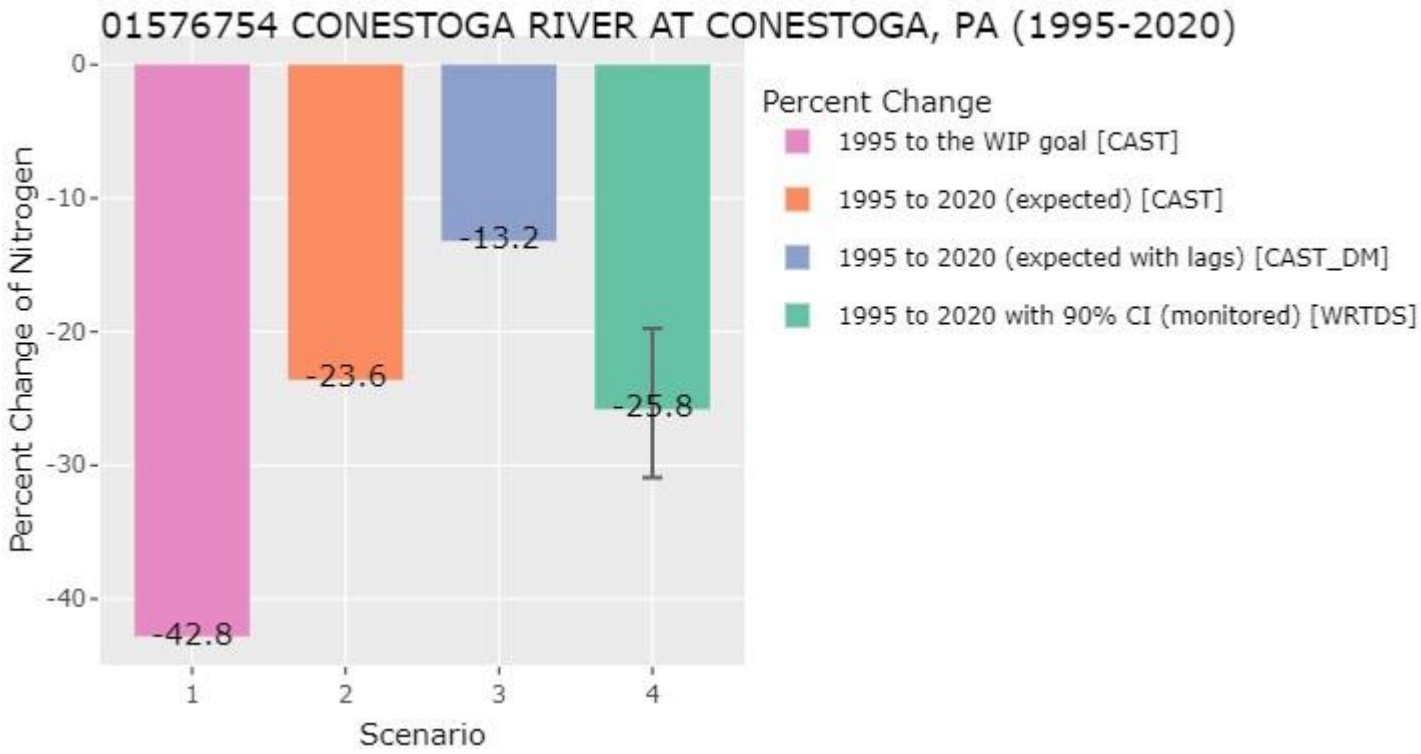
Nitrogen in the Patuxent



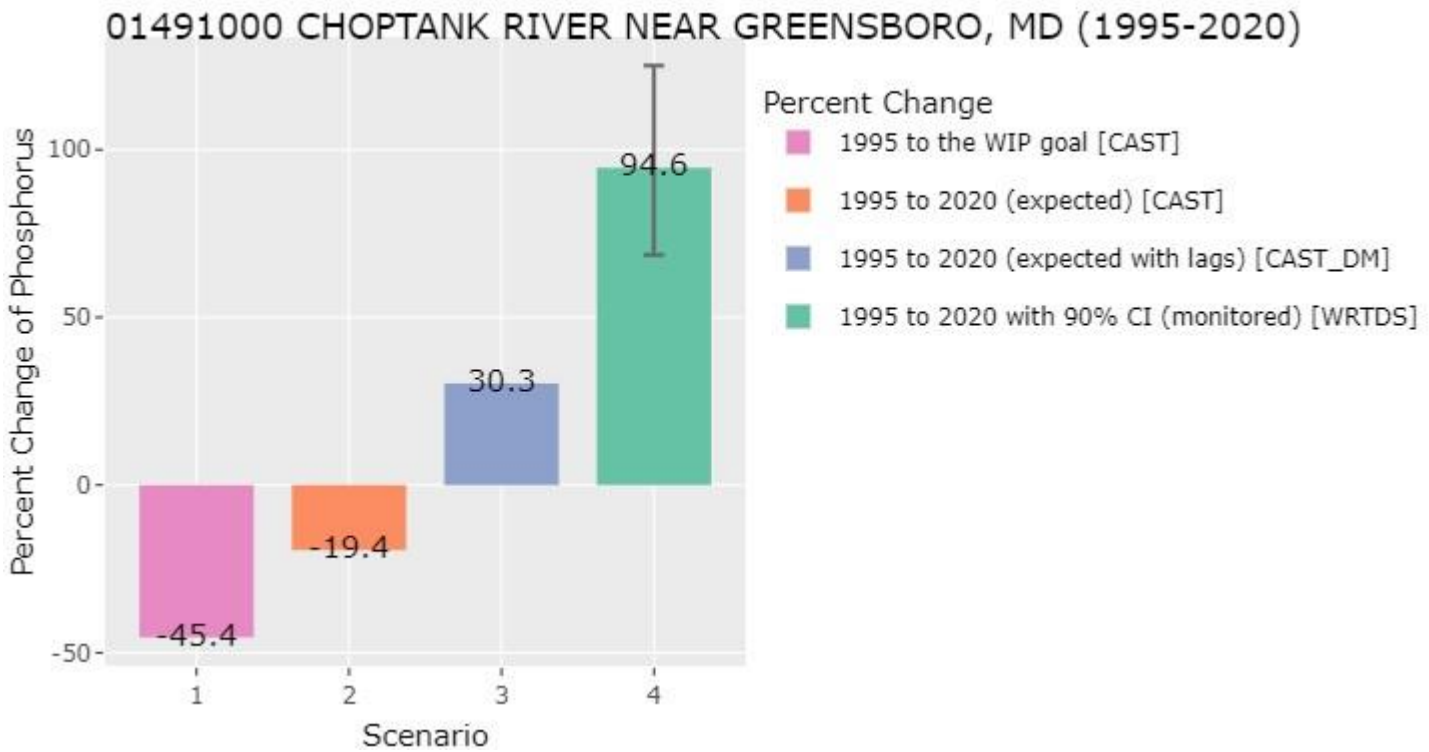
https://zhangqian0324.shinyapps.io/CBNTN_TMDL_Indicator/

Nitrogen in the Conestoga





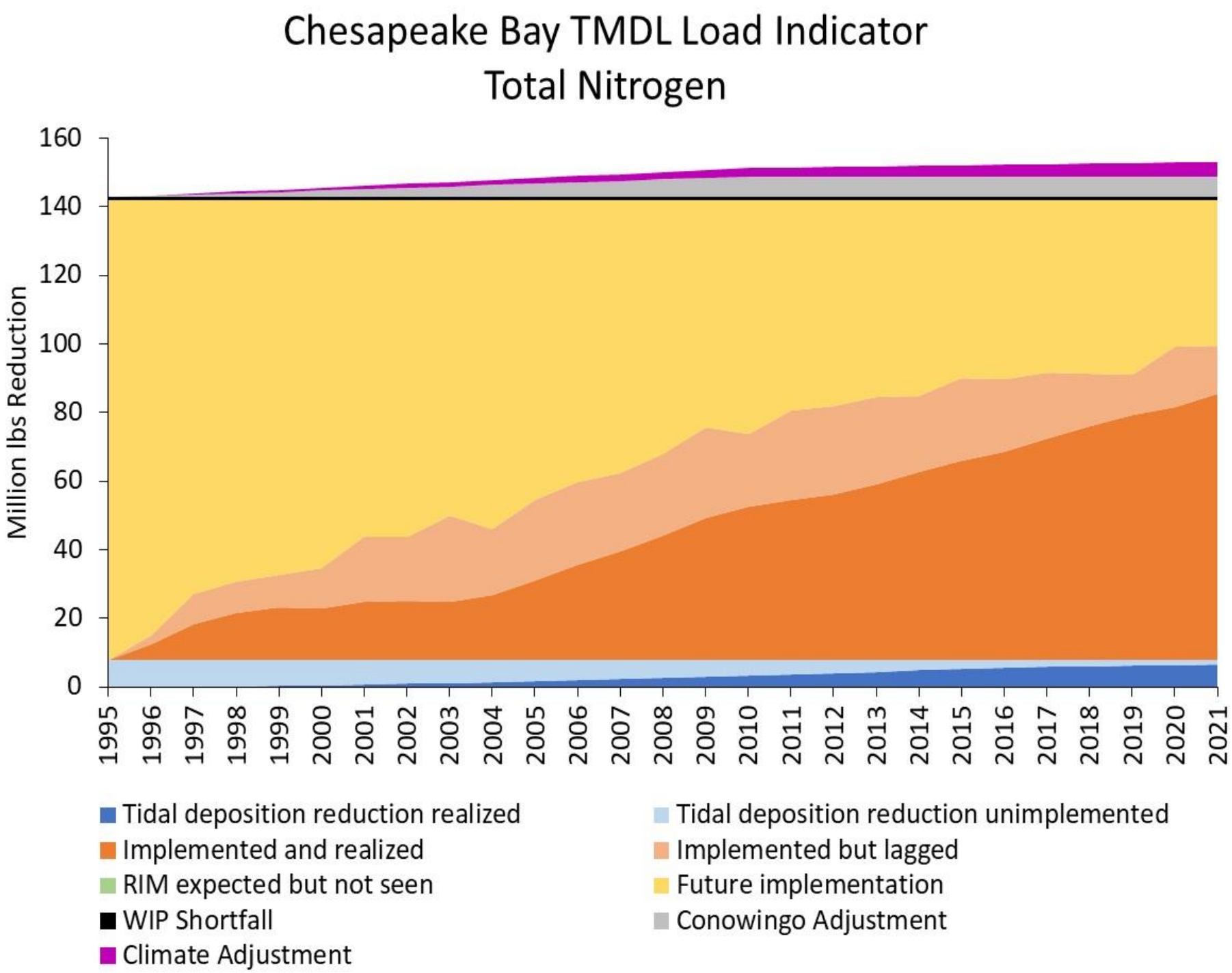
Phosphorus in the Choptank



https://zhangqian0324.shinyapps.io/CBNTN_TMDL_Indicator/

Public Indicator

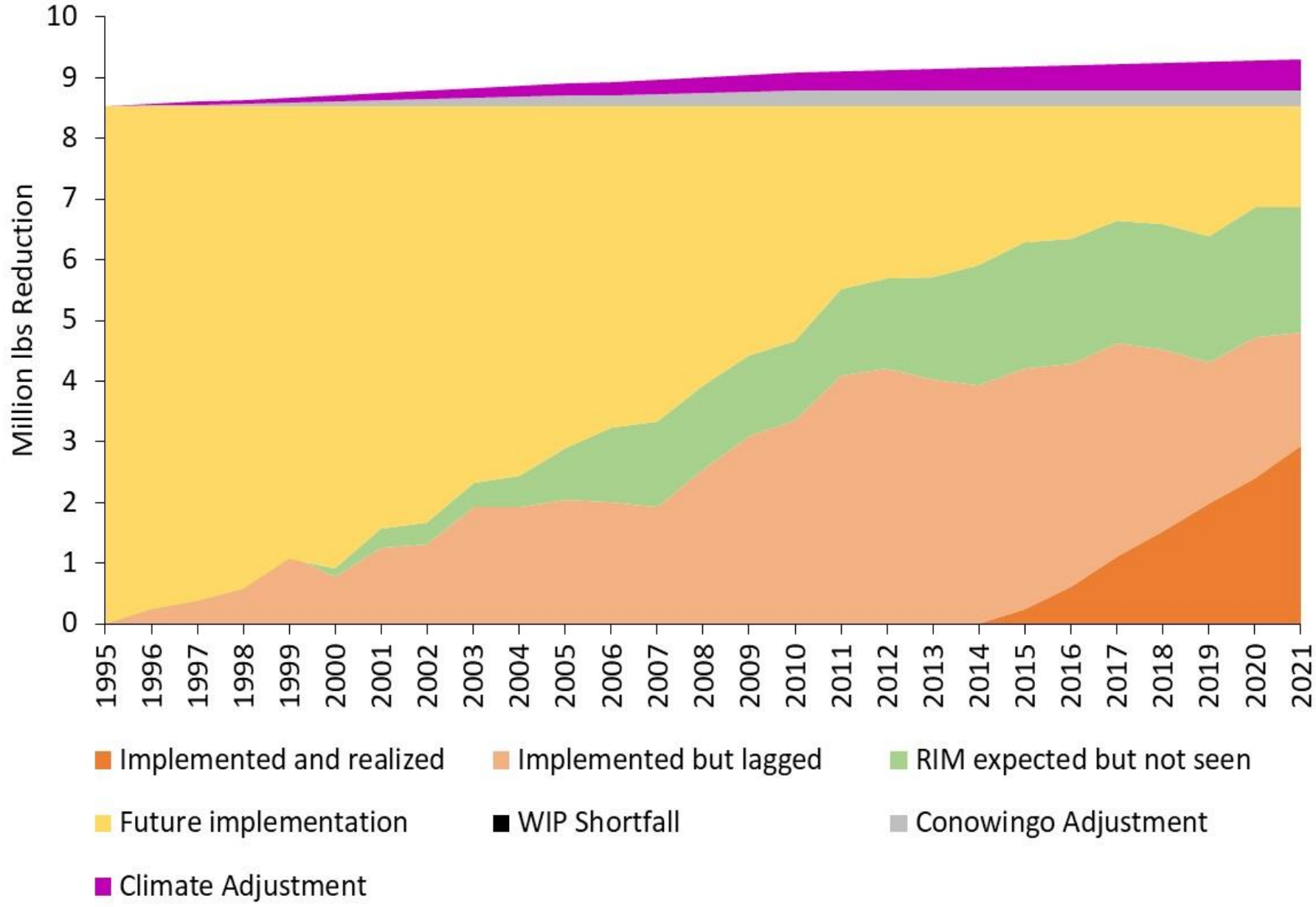
Updated Annually



Web team will reformat
Including addressing accessibility

Public Indicator

Updated Annually



Web team will reformat
Including addressing accessibility