



Virginia
WATER RESOURCES
Research Center



Demonstrating the Value of Retaining Forestland in the Chesapeake Bay Watershed



Healthy Watersheds
Forest/TMDL Project



Be River Friendly
It's Your Backyard

The Rappahannock River Basin Commission

Forestry Work Group
Presentation

September 2, 2015

Project Goal

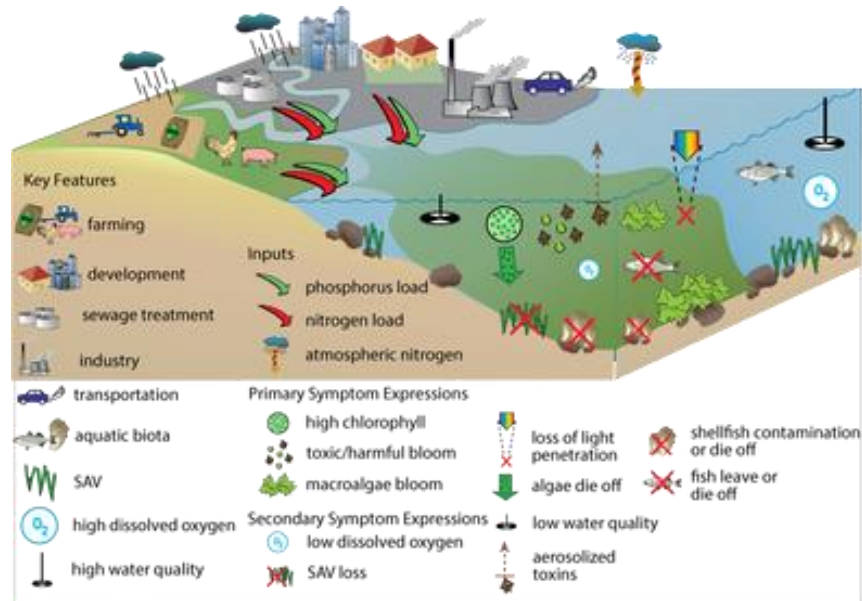
- ▶ Build case for crediting forestland retention actions by localities in the TMDL model and through regulatory and policy changes at the federal, state and local levels



Why?

- Forest cover is recognized as one of the best land uses for achieving Chesapeake Bay goals and outcomes.
- **BUT** – localities in the watershed say unless TMDL credit is given for retaining forestland, there is little local incentive for preserving forestland.
- This project addresses that issue.

Project Objective



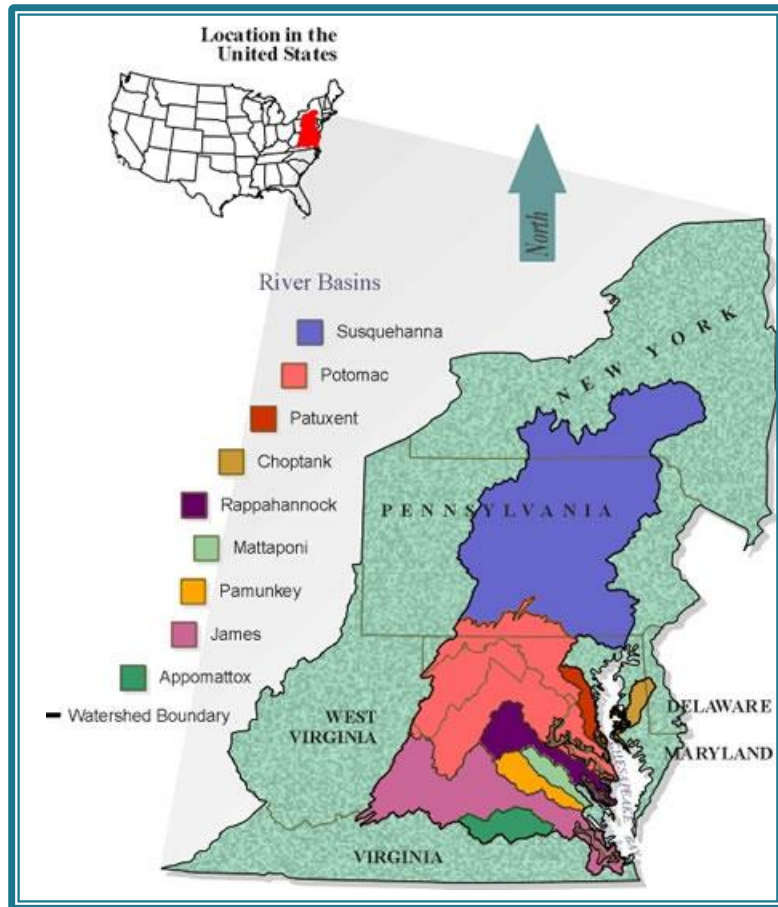
ian.umces.edu

Eutrophication is one of the major factors contributing to the increase in harmful algal blooms in the Chesapeake Bay.

Diagram courtesy of the Integration & Application Network, University of Maryland Center for Environmental Science.

- ▶ Determine if forest retention actions by localities, private land owners and others will decrease load over the 2025 projected land cover and loads
- ▶ If the answer is “yes” determine way to credit them for retaining forestland through the Chesapeake Bay TMDL Model

Alignment with 2014 CBWA Goals, Outcomes & Management Strategies



- ▶ **Healthy Watersheds**
- ▶ **Land Conservation**
- ▶ **Protect and Restore Water Quality**
- ▶ **Vital Habitats**
 - Forest Buffer
 - Tree Canopy
- ▶ **Stewardship**
 - Citizen Stewardship
 - Local Leadership

Phase1 Project Plan

Evaluate
growth
trends in
pilot
region

Compare to
TMDL model
land use
change
projections

Model
alternative
growth
scenarios

Conduct
literature
review
and factor
in
findings

Share
findings
with
localities
and state
officials

Provide data
to EPA for
possible
2017 TMDL
model
revisions

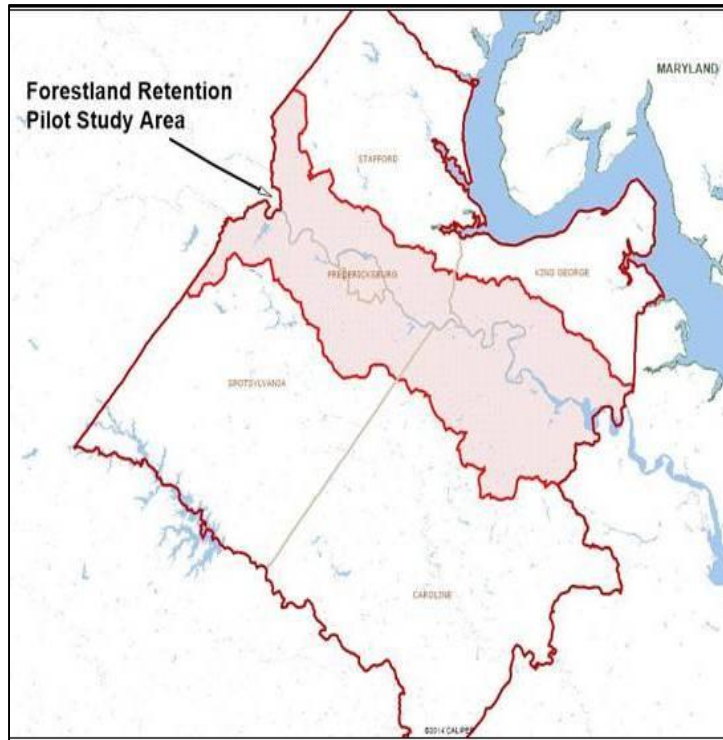
Study Area: Proxy for Bay Watershed



Rappahannock River Basin

- Geography: headwaters to coast
- Land Use: forest, agriculture, urban, rural
- Areas of high density development growth
- Home of Rappahannock River Basin Commission (RRBC)
- 100 percent in Virginia so watershed issues outside of Virginia control are minimal (other than air)

Phase I Pilot Study Area



► GWRC service area within RRB

- Land Use: forest, agriculture, urban, rural
- Areas of high density development growth
- Home of George Washington Regional Commission
- 100 percent in Virginia

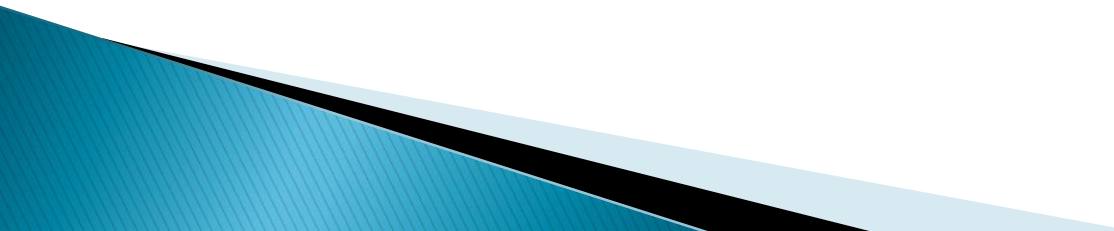
Alternative Land Use Modeling Scenarios Run

1. Current TMDL 2025 predictions for each pilot area locality
2. GWRC Green Infrastructure Model
3. Comprehensive Plans Implementation Model
4. Hybrid Model between (2) and (3)

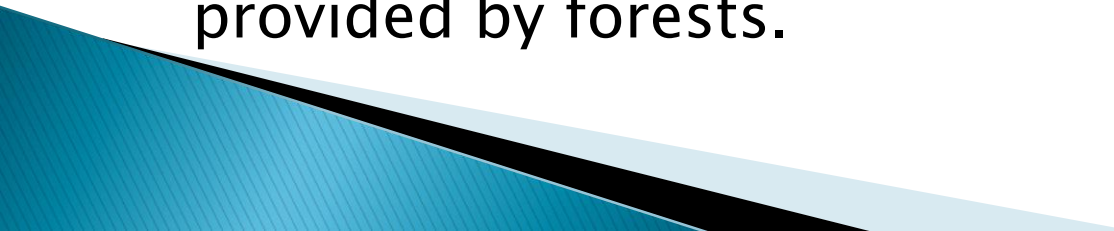
In addition, 2010 and 2015 scenarios were also run to identify trends.



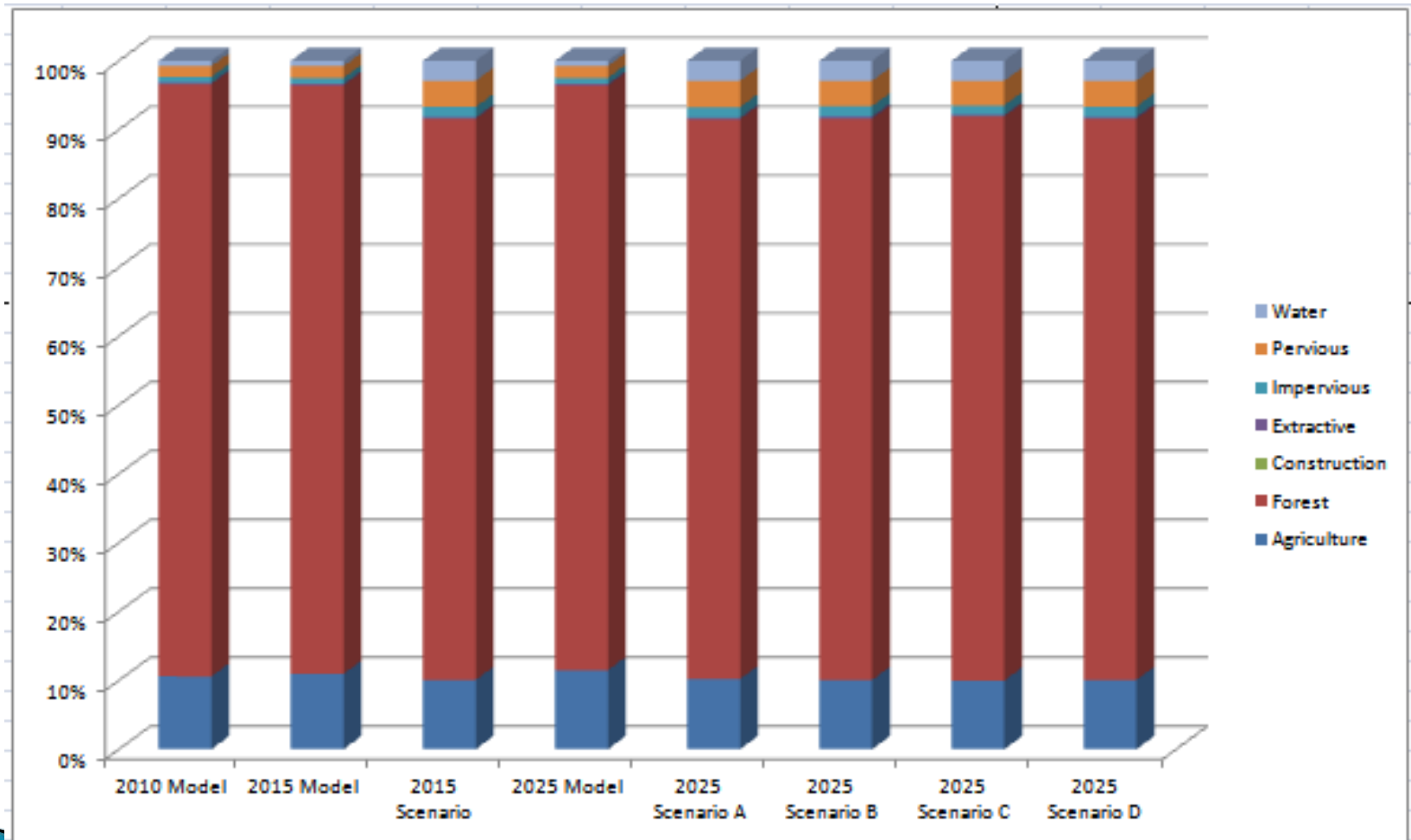
Methodology

- ▶ Project partners coordinated with EPA to use datasets complementary to those used for the EPA CB TMDL model to create synthetic estimates and forecasts of land cover
 - ▶ Estimates reflected:
 - Current estimates of forest cover by river segment shed by locality
 - Assumptions of urban BMP installations with any impervious surface area growth
 - Consideration of the growing inventory of conserved lands
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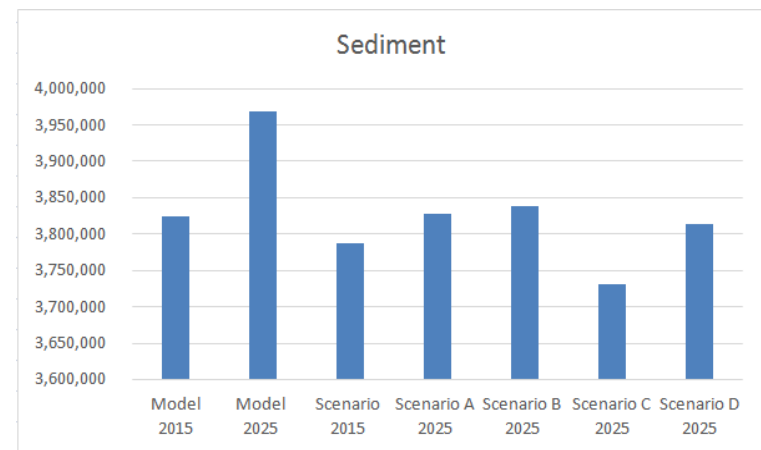
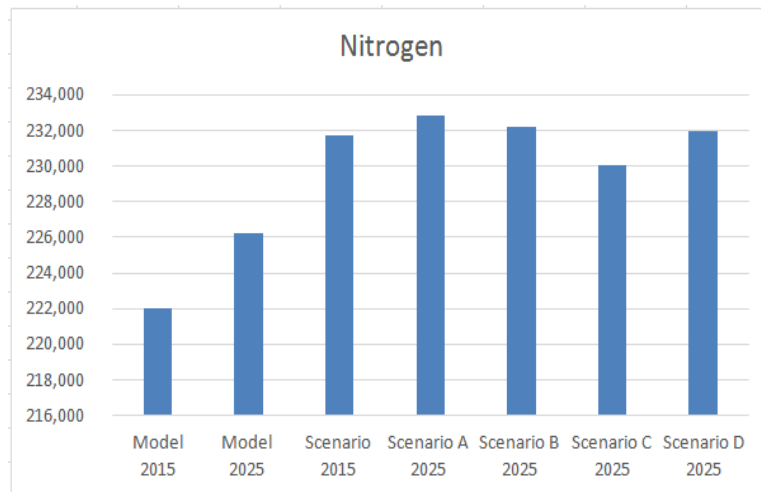
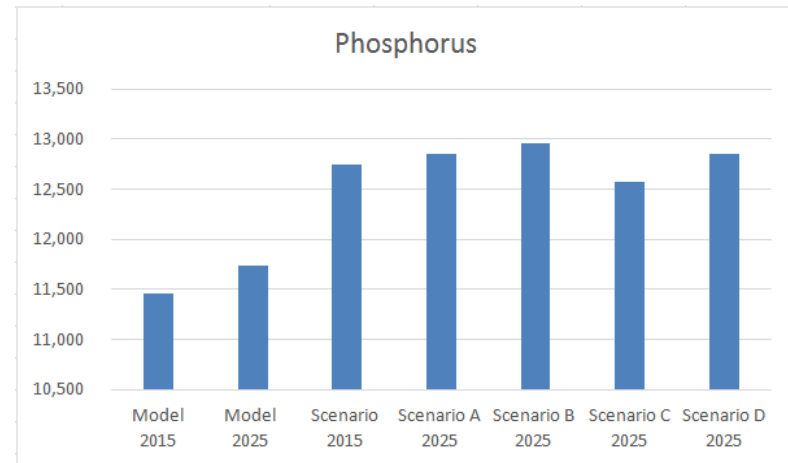
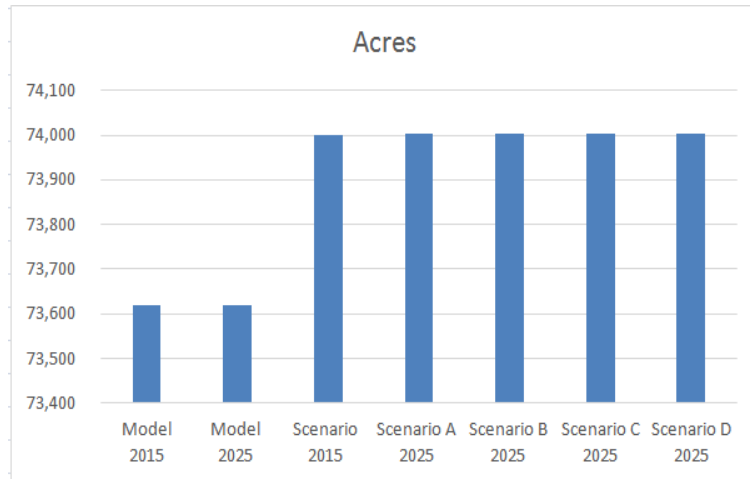
Phase I Preliminary Findings

- ▶ Results confirm water quality and healthy watershed value of forestland retention and demonstrate range of potential offsets are possible depending on investment made early in BMPs that retain forestland.
 - ▶ Produced regional demonstration of how alternative development methods that increase high value forestland retention can help reduce the offset requirements of development.
 - ▶ This could in turn reduce BMP treatment costs needed to comply with Virginia's nutrient neutral stormwater regulations, while maximizing the ecosystem services provided by forests.
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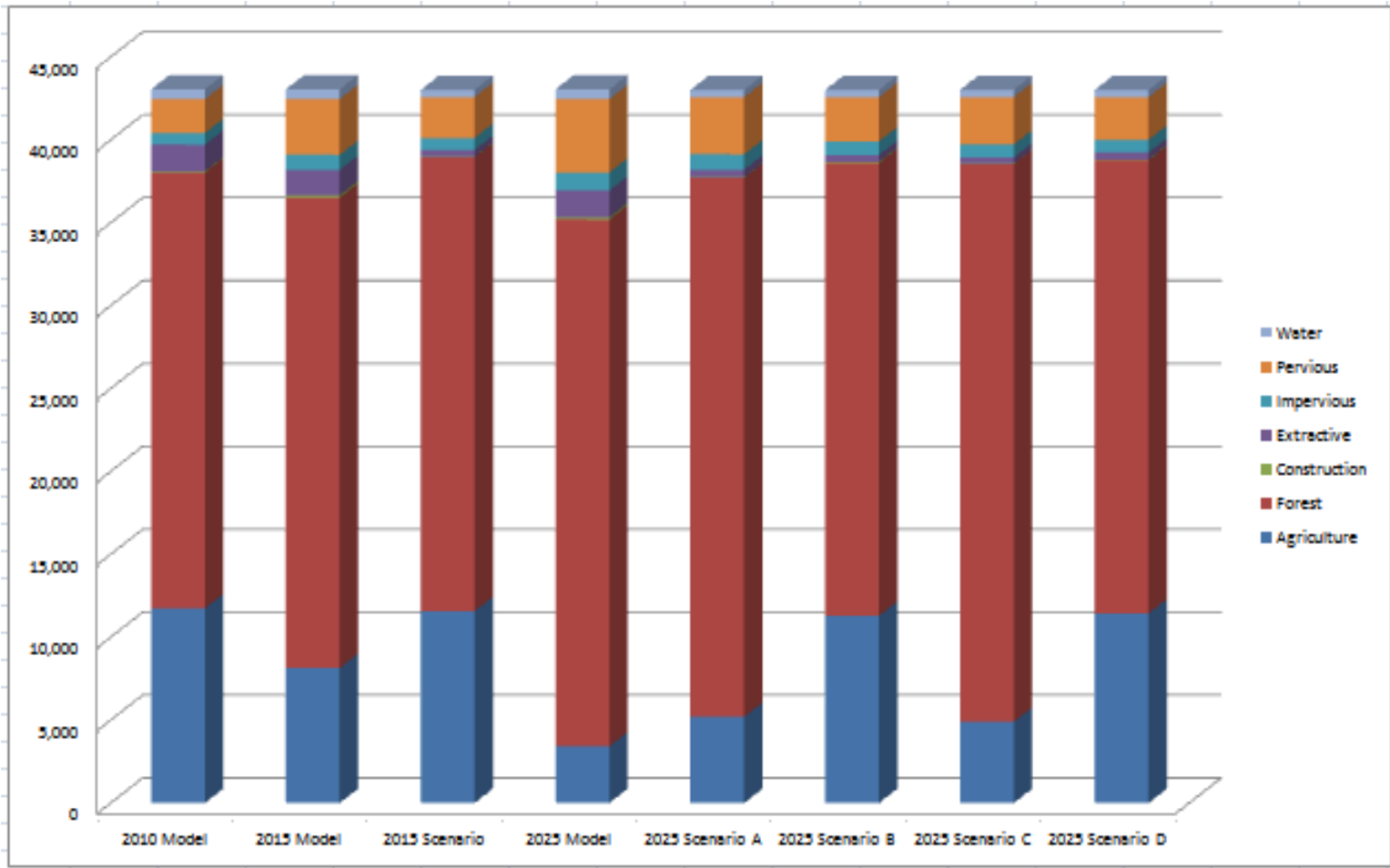
Results By Locality: CAROLINE COUNTY



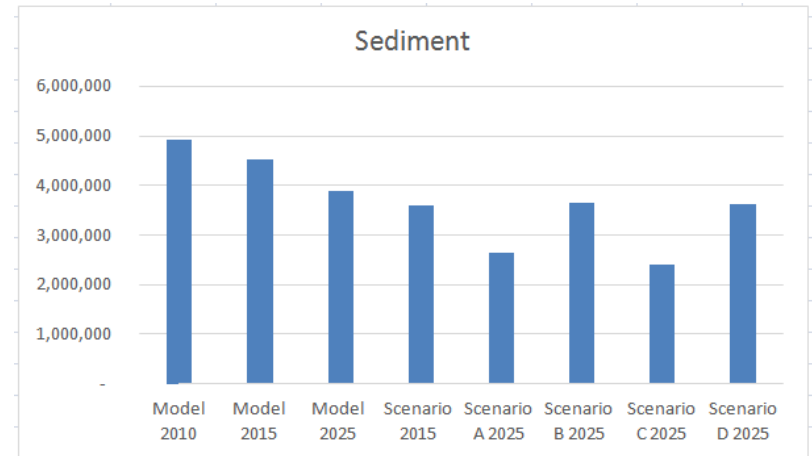
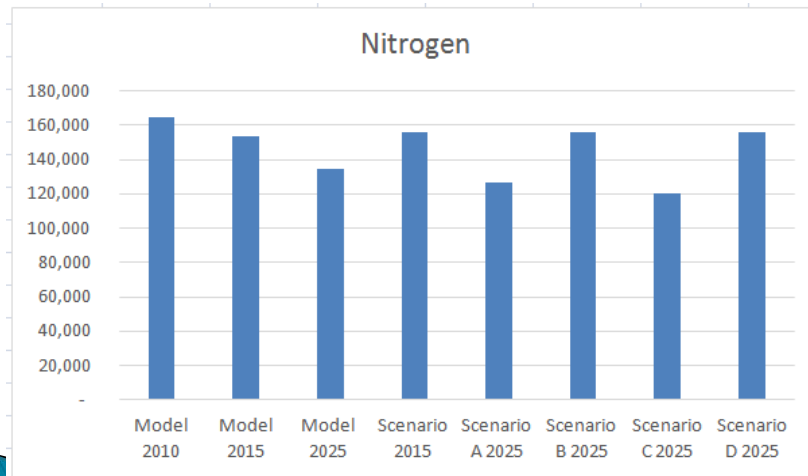
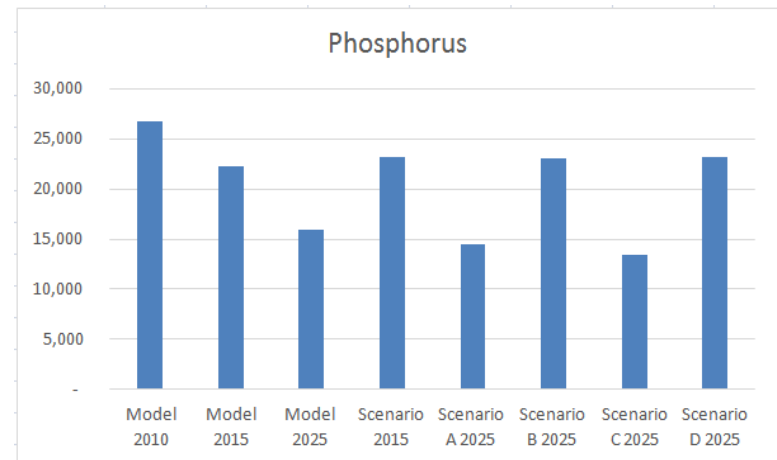
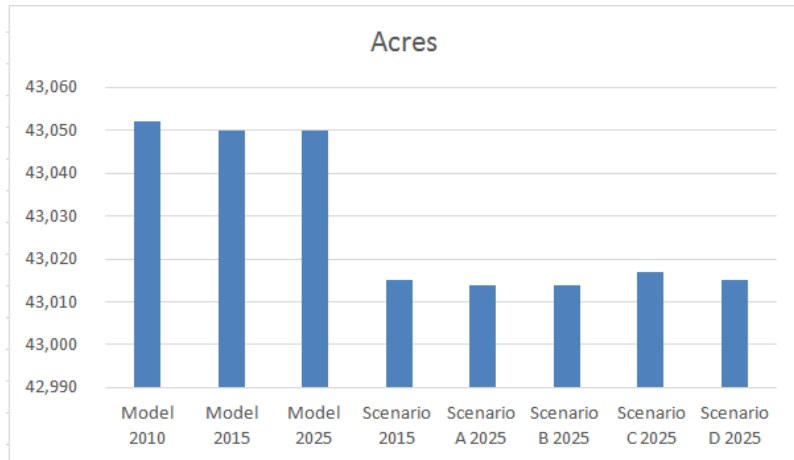
Caroline County TMDL Results



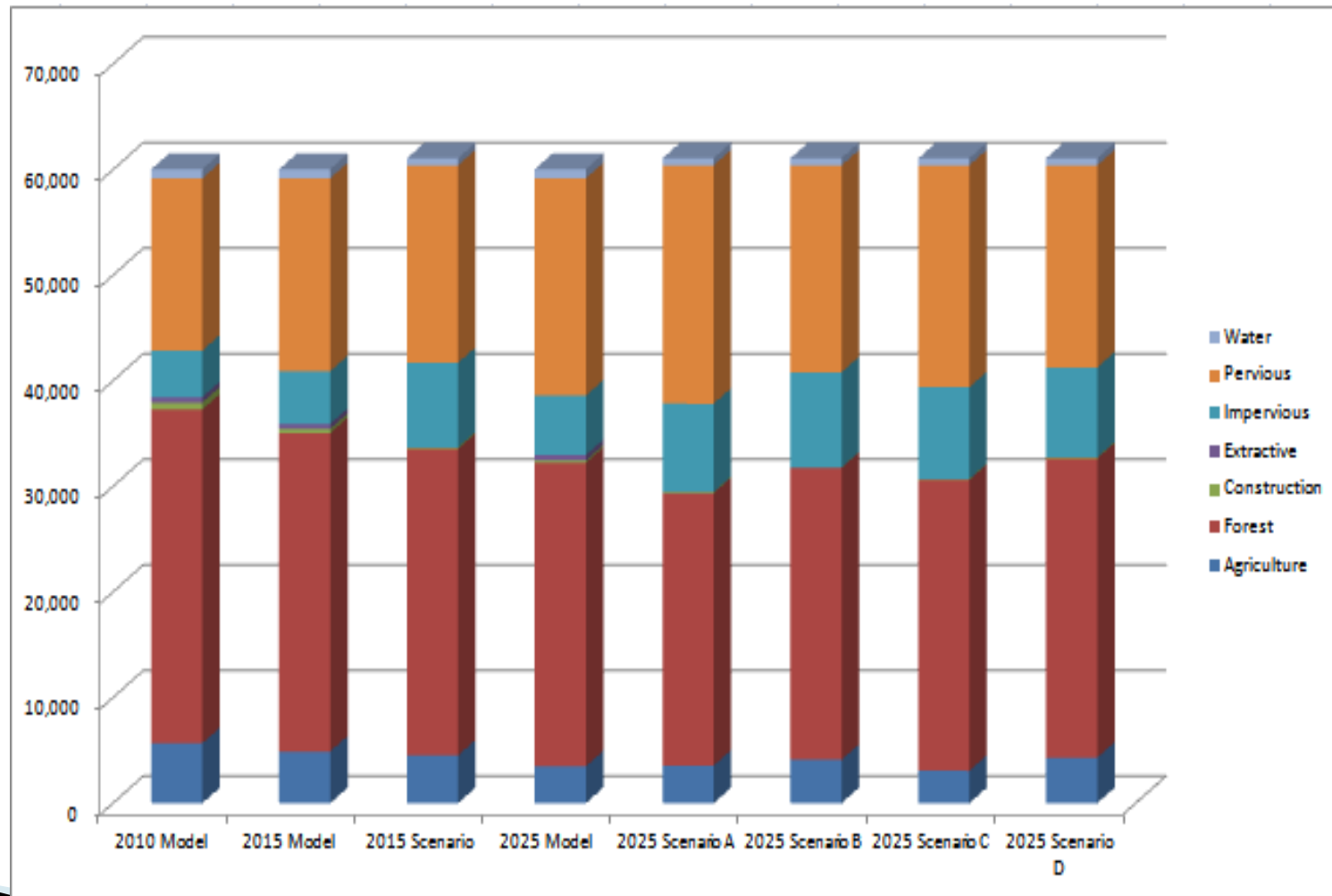
Results By Locality: KING GEORGE COUNTY



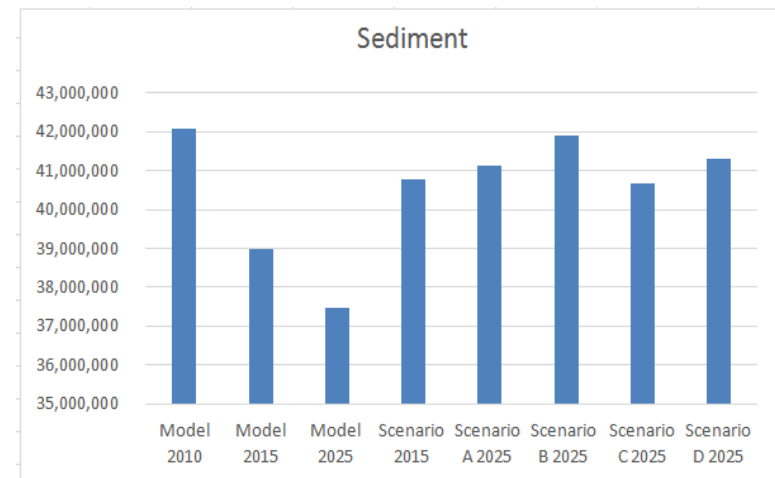
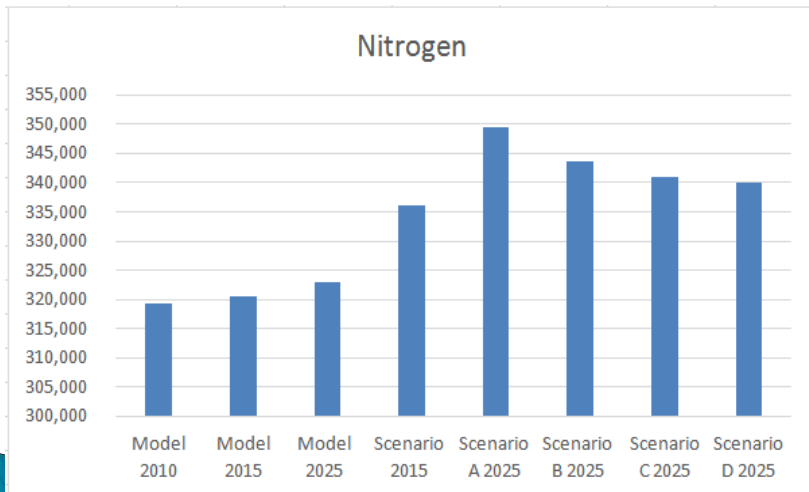
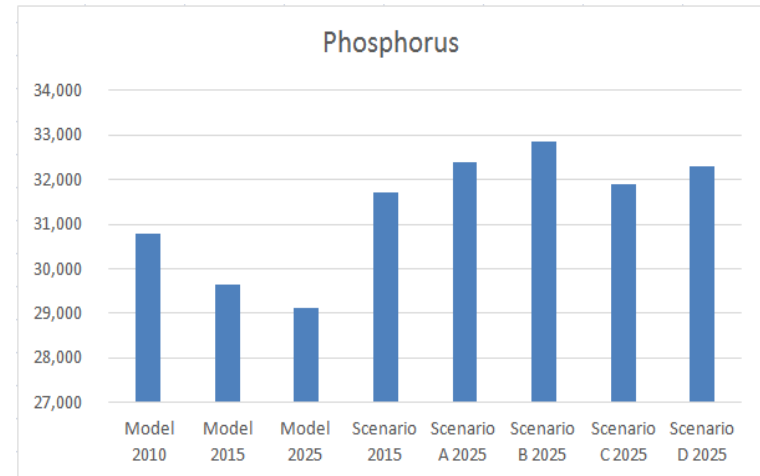
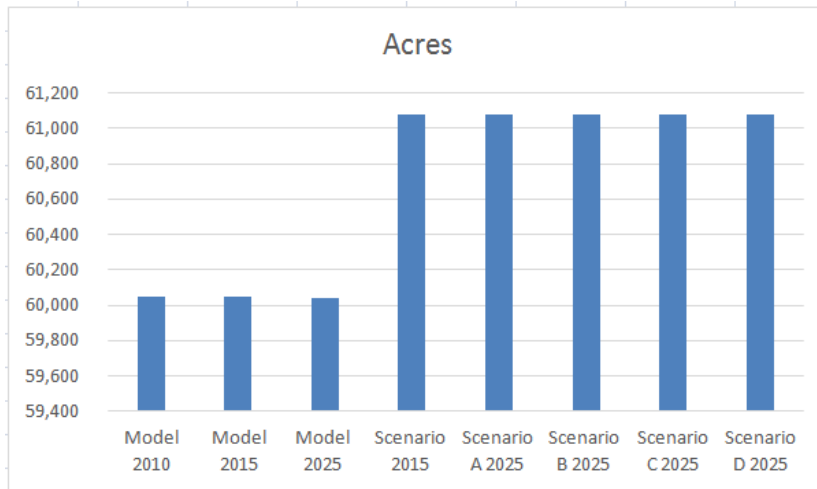
King George County TMDL Results



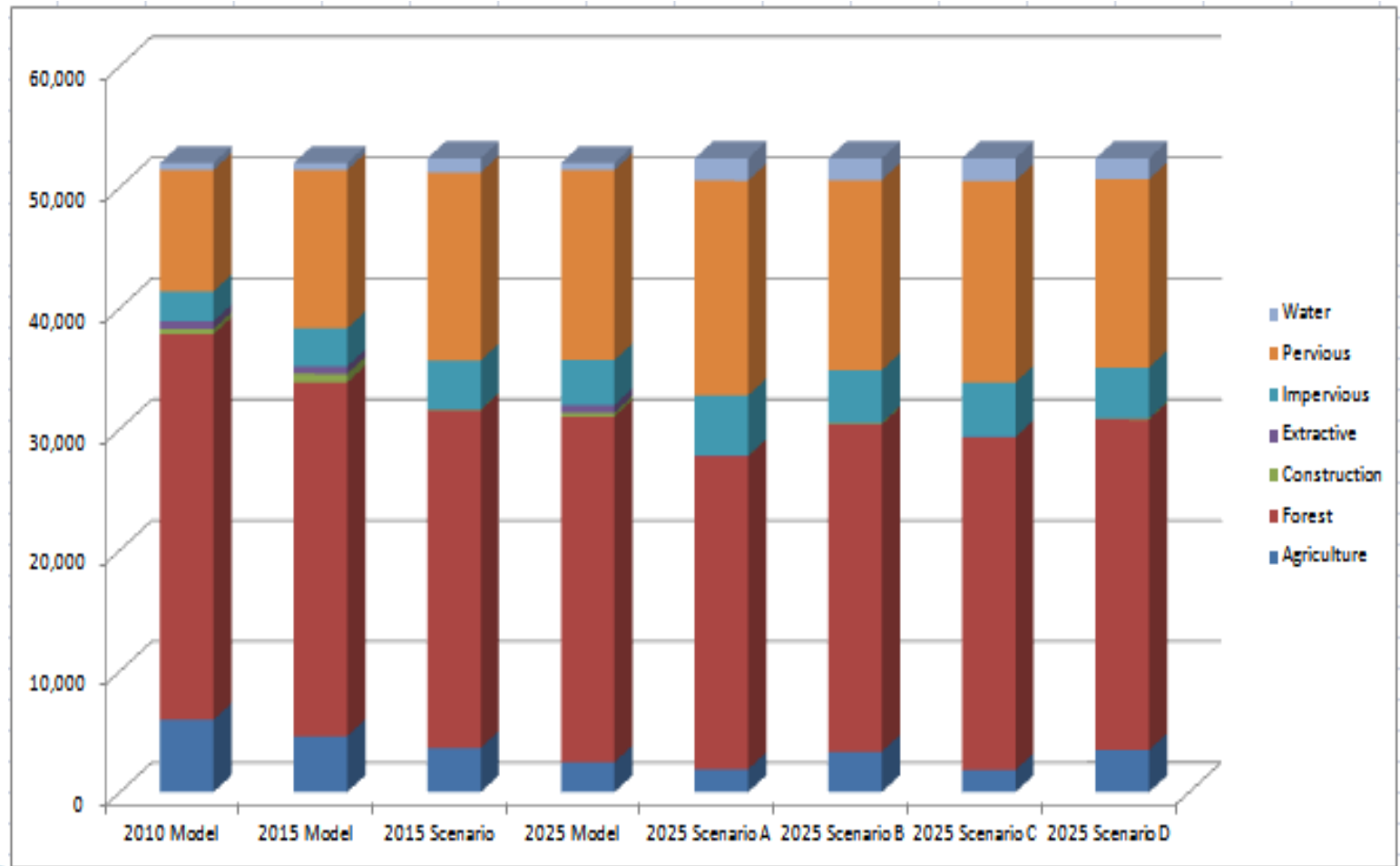
Results By Locality: SPOTSYLVANIA COUNTY



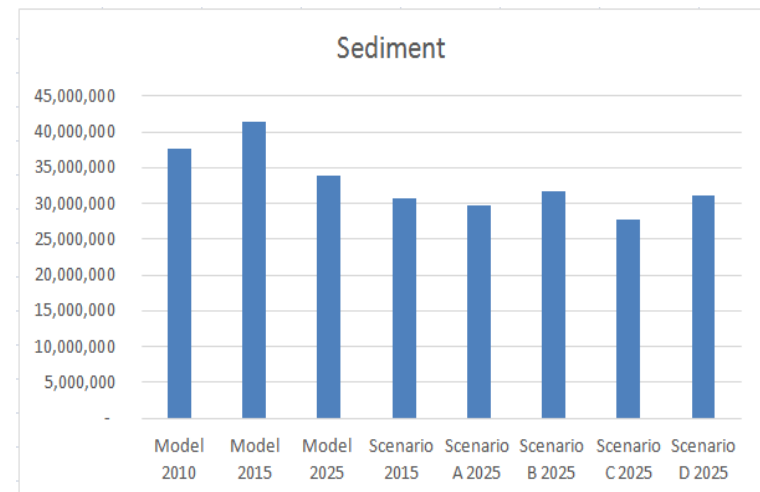
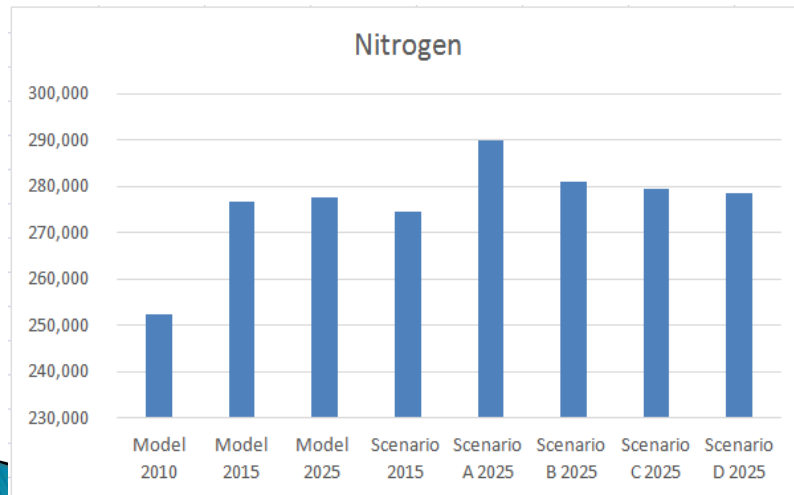
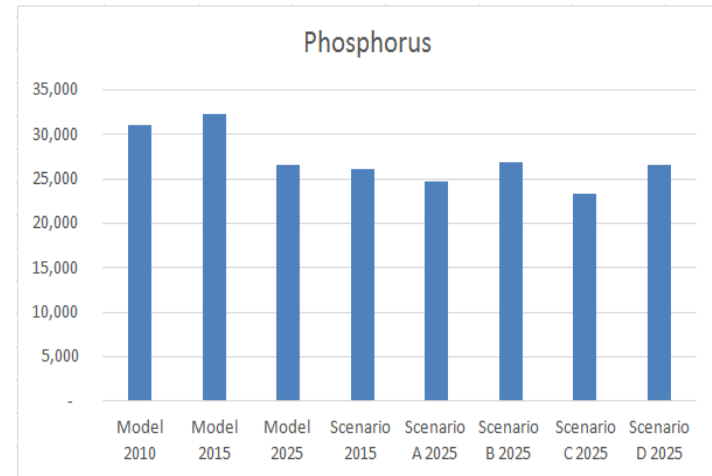
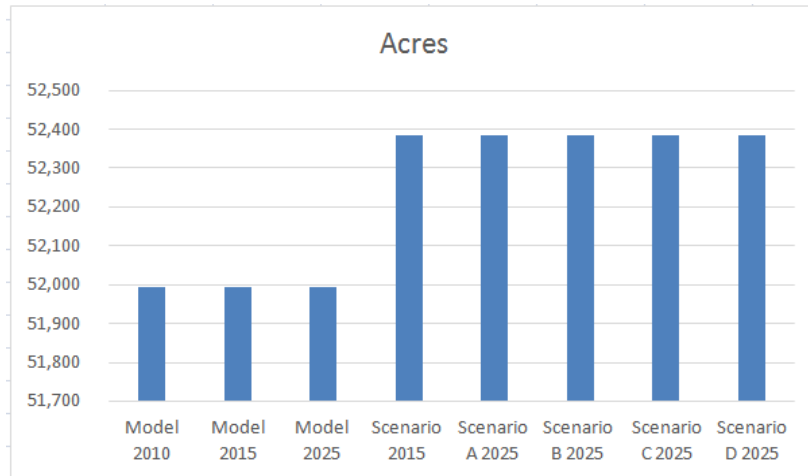
Spotsylvania TMDL Results



Results By Locality: STAFFORD COUNTY

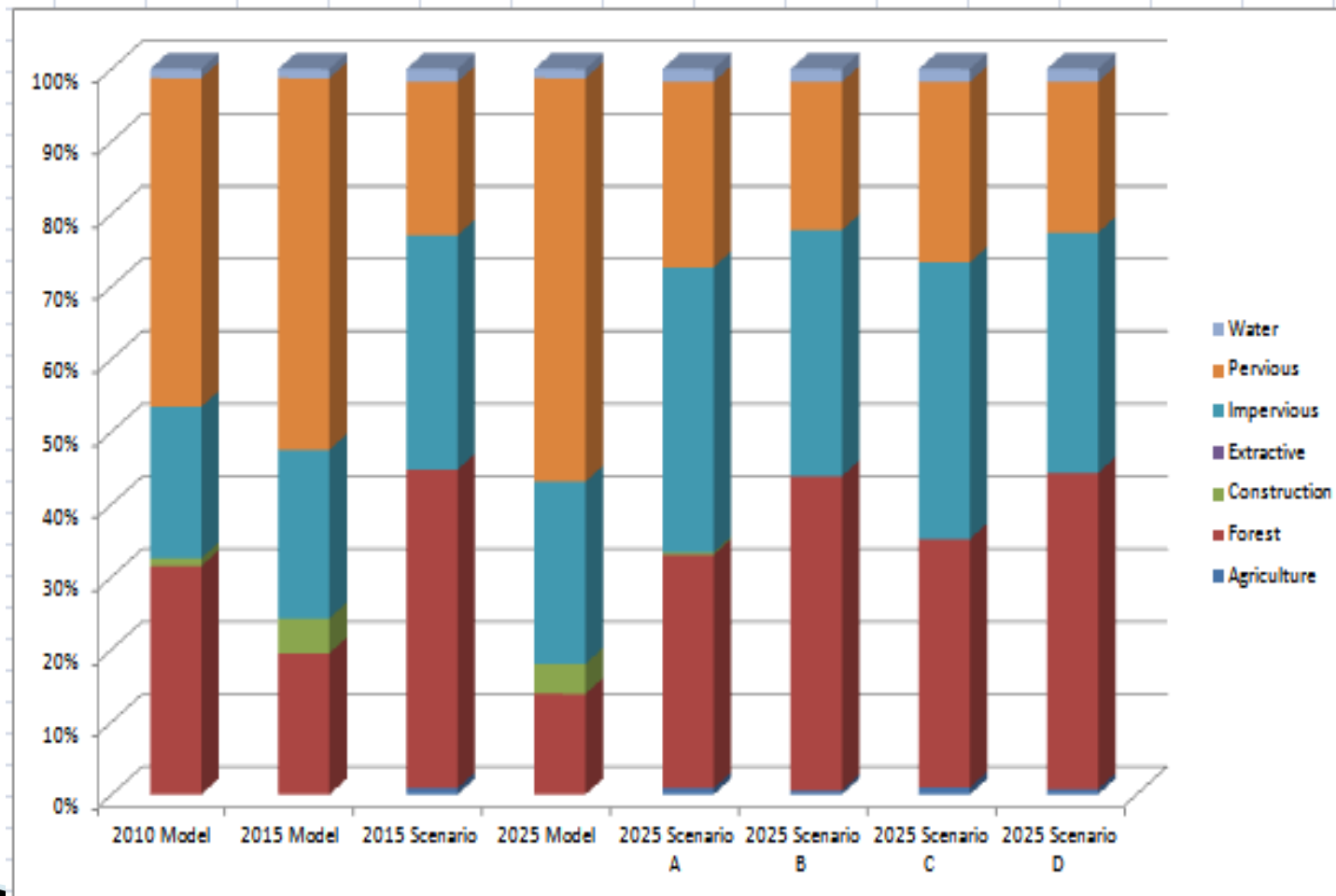


Stafford County TMDL Results

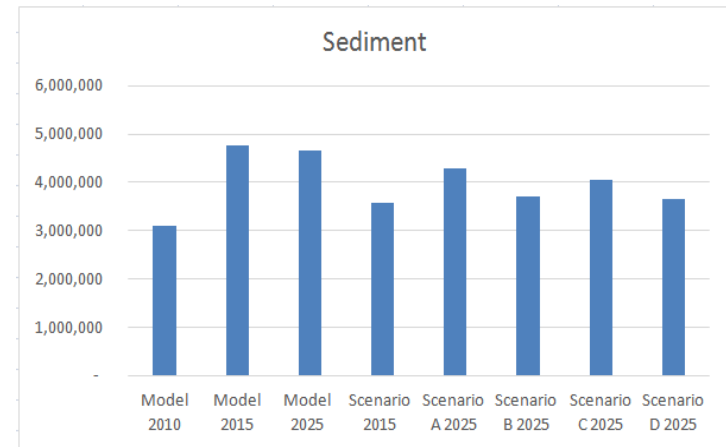
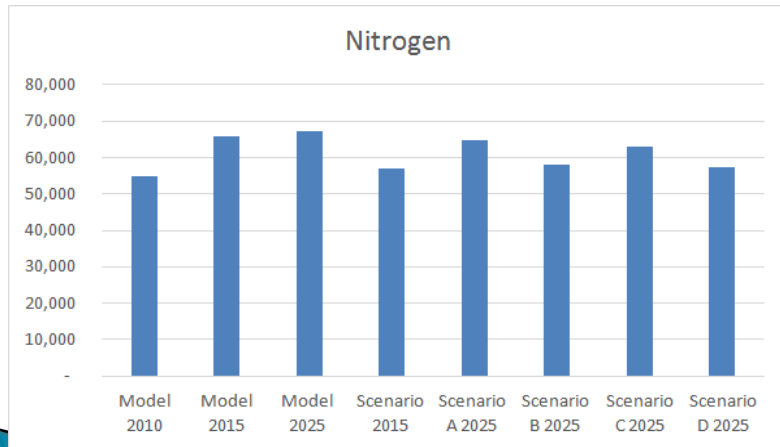
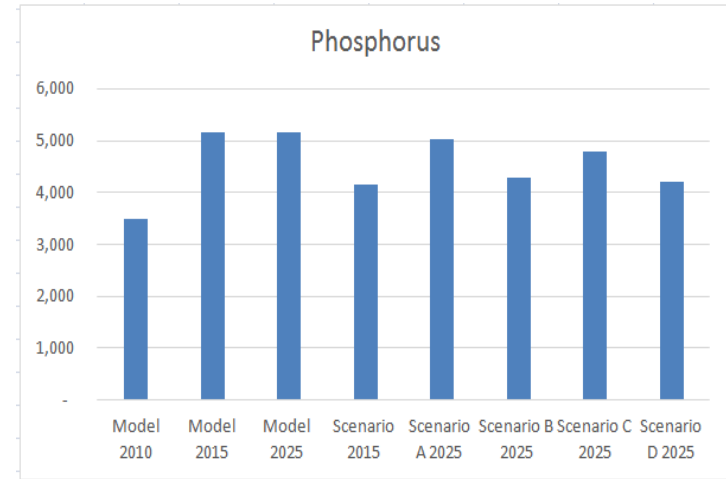
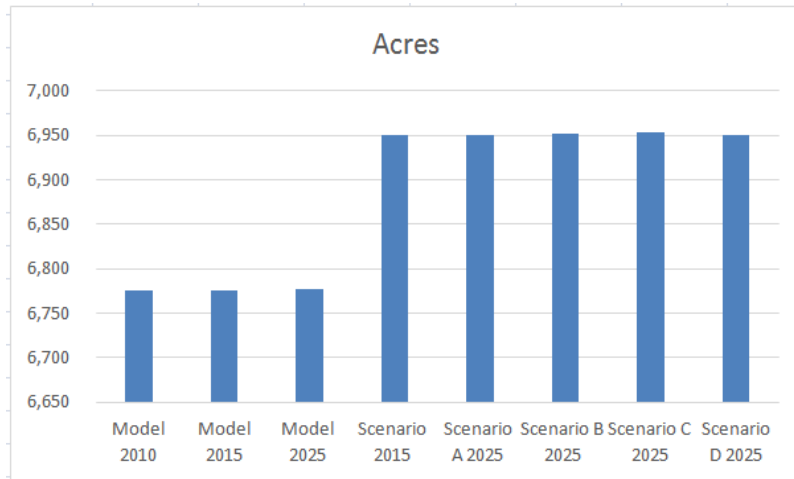


Results By Locality:

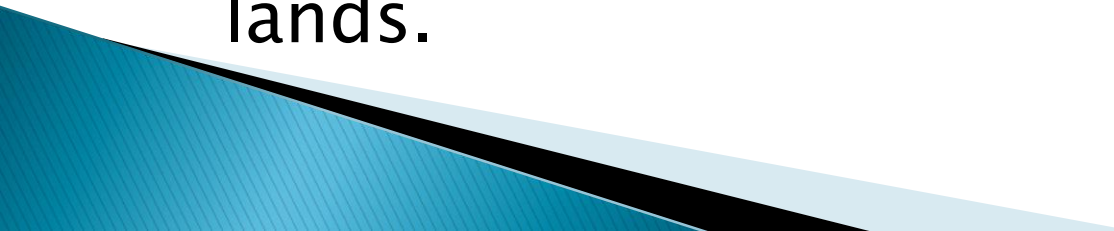
CITY OF FREDERICKSBURG




City of Fredericksburg TMDL Results




Phase II Goal: Engagement

- ▶ Work extensively through the RRBC, with local government officials within the Basin, as well as LGAC and other GITs to develop the tool box of criteria, incentives, etc. that could be used in land use policy and zoning situations to accurately identify and assign appropriate values to high conservation value forest lands.
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Phase II Plan

- ▶ Divide Rappahannock River Basin into three separate study areas –
 - Lower, middle and upper basins. Each area provides different political, economic, environmental and social perspectives
 - OBJECTIVE: learn how different dynamics change thinking about what works and doesn't work.
 - ▶ RRBC will conduct peer-to-peer discussion sessions with geographically targeted focus groups of key elected officials and planning community senior staff
 - Identify obstacles, incorporate best practices and lessons learned elsewhere, develop solutions, and build tool box elements.
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Phase II Objectives

- ▶ Work with EPA and CB GITs to frame options for developing Forestland retention BMP in TMDL model
 - ▶ Carry out discussions/negotiations across basin with localities to build, test and implement elements of tool kit to drive more consideration of forestland retention in land use policies and decisions
 - ▶ Ask Pennsylvania to join project in peer review and testing capacity and coordinate on lessons learned and tool kit elements
 - ▶ Make teams available to other CB jurisdictions to provide advice on implementing toolbox elements
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For further information

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