

"I can't swim, and I am scared of going to Oyster during a storm, due to the flooding conditions."  
 Local Resident of the Eastern Shore (2025)

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# STORM SURGE on the Eastern Shore

## What is happening and why?

Intense rainstorms are expected to become more frequent and more severe on the Eastern Shore of Virginia (ESVA). Inland flooding from these events threatens local roadways—it only takes inches of water to make a road impassable.

By 2060, roadway flooding on the ESVA is projected to increase by 9–13%, affecting roughly **180 miles of roads**. By 2080, another 60 miles may become newly vulnerable.

## What does this mean?

More impassable roads will make it harder for residents to get to work, prevent buses from picking up students, and leave neighborhoods cut off during storms. Roadway flooding is not just a nuisance—it poses a serious safety risk.

### AVERAGE FLOODING DURATION FROM HURRICANE ISABEL



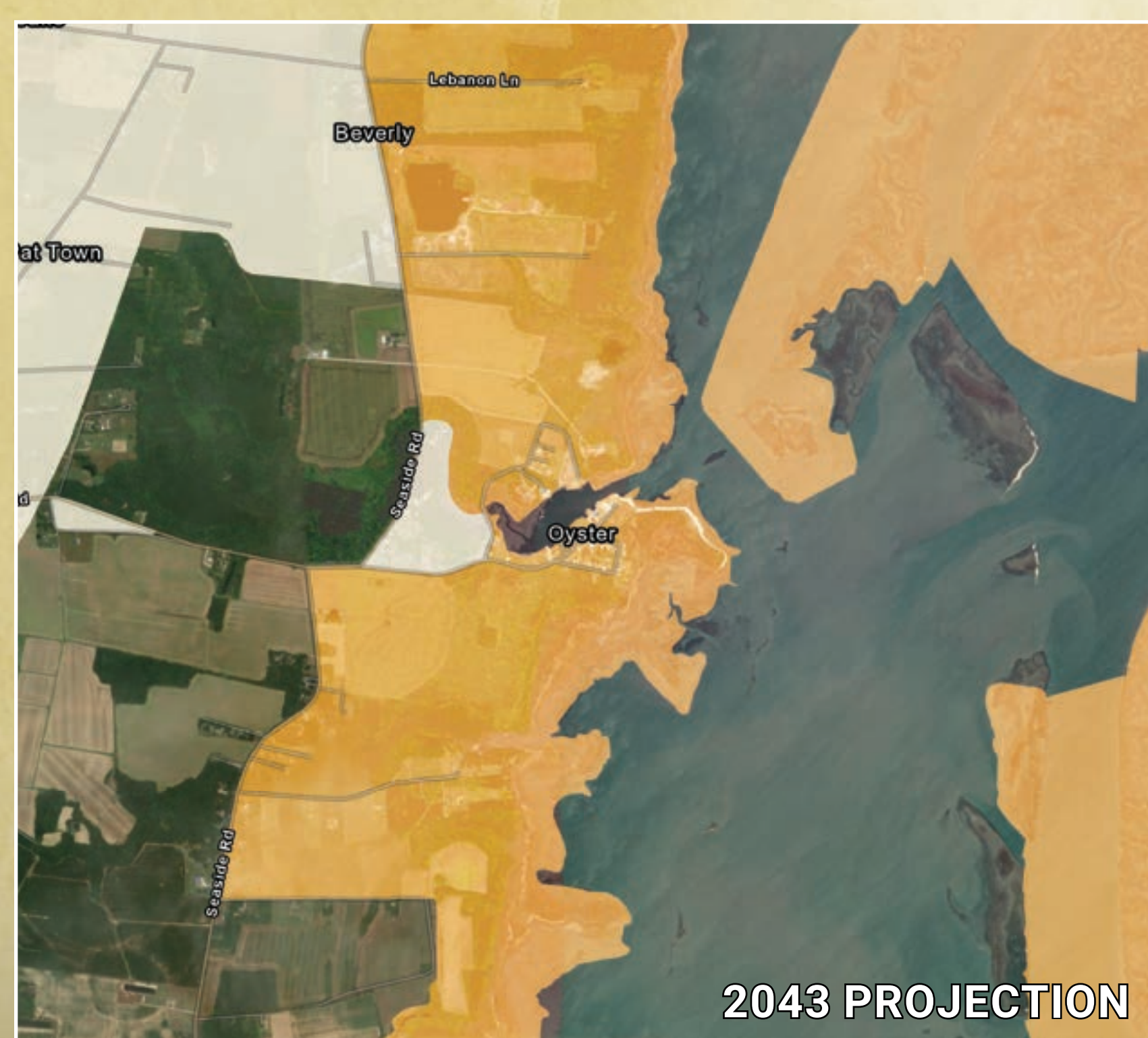
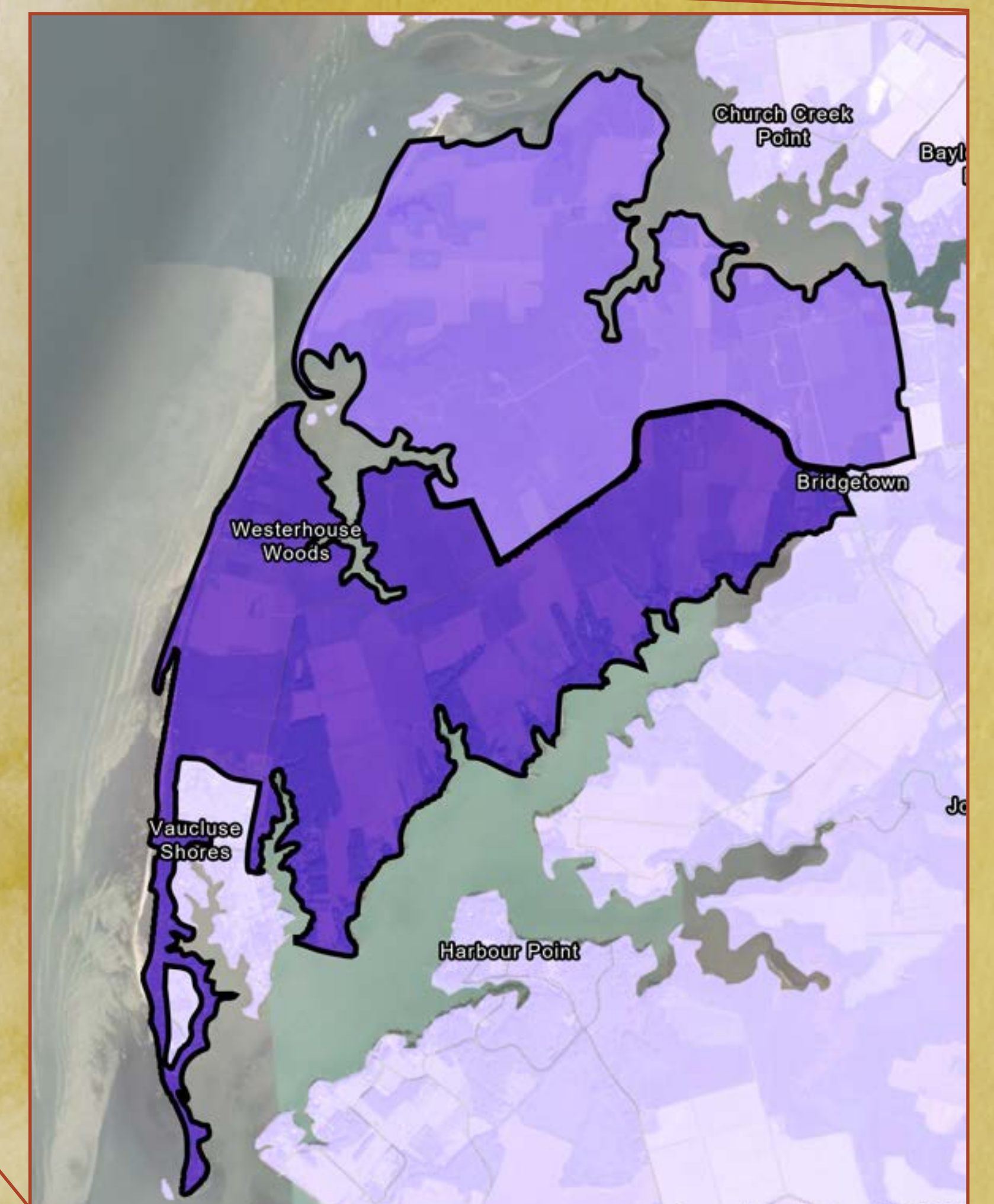
The Eastern Shore was severely impacted after Hurricane Isabel in 2003. This map shows the average maximum water level due to storm surge in the Eastern Shore area during Hurricane Isabel.

## Comparison between the maximum height of storm surge between 2003 (left) and predictions for 2045 (right).



\*This data is averaged within census block groups and may not reflect the specific condition of a location.

In this neck of the Eastern Shore, around 176 people live in residences that experienced flooding for nearly three days during Hurricane Isabel. 22 more people lived in houses with 15 hours of flooding.



## Adaptation strategies

**Identifying which communities and roadways are most at risk** can help prioritize upgrades to stormwater infrastructure and emergency response systems. Roads downhill from development, culverts in poor condition, and overgrown ditches often provide clues to where flooding may occur.

**Maintaining and upgrading stormwater infrastructure** will help to build community resilience and keep roads clear. Proactive investment today can protect public safety, keep ESVA connected, and maintain economic stability in the decades ahead.



Oyster saw a nine-foot storm surge during Hurricane Isabel in 2003. Its shoreline and tidal creeks make it prone to inland flooding. By 2043, similar storms could raise flood levels by two feet, threatening areas that stayed dry before.

Storm surge is likely to reach up to the town of Bayside, which is close to several creeks that affect flooding. However, the Bayside areas further from creeks are likely to experience less than three feet of storm surge.

Co-Produced by Residents of the Eastern Shore & The Eastern Shore Livability Hub Team

Zhu, Qingguang and Patricia Wiberg, "Quantifying temporal trends of storm surge and spatial flooding patterns from tropical cyclones and extratropical storms on the Eastern Shore of Virginia." To be submitted in 2025. Groundwater and Septic System Vulnerability.

Storm surge simulations were generated using the ADCIRC storm surge model for the northwestern Atlantic Ocean with a high-resolution grid for the Chesapeake Bay regions. Results were aggregated to U.S. Census Bureau blocks for visualization in the Livability Tool.

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