

# Burnside Island Causeway Project:

A Gray/Green Approach to Protect Infrastructure Degradation due to Sea Level Rise

## Sustaining Community Services & Safety: The WHY?

Chatham County Department of Engineering (CCDOE) identified an immediate need to evaluate structural impacts from increased coastal flooding events. This evaluation allows CCDOE to address current and projected impacts from sea level rise as it relates to County roadways and stormwater conveyance systems.

Over the past few years, flooding events on low lying areas have increased. Flooding is impacting the road and conveyance structures while causing navigational hazards during these high water times.

Flooding's effects on structures and roadways need to be addressed. Structure evaluations will provide data on if/how current structures are responding to increased inundation while providing data to determine possible effects from projected rising sea levels. Oftentimes, roads are raised to alleviate flooding, but raising roads is very costly and raised roads do not address erosion and sediment loss. Research has shown a benefit in blending natural ("green") and man made ("gray") approaches as these efforts work in tandem to stabilize coastal areas, protect structures, and lessening flooding events.



## Burnside Island Causeway: The WHERE?

Burnside Island Causeway, a portion of Shipyard Road, is located along the eastern marsh edge of Chatham County. This road segment has been prioritized as the most impacted road and conveyance system in Chatham County. Burnside Island Causeway was selected for this project as this road is the only roadway allowing entrance and egress to Burnside Island's 1,051 residents and visitors.

## Partnerships: The WHO?

The Burnside Island Causeway Project is made possible through a partnership with the Chatham County Department of Engineering (CCDOE) and the UGA Marine Extension & Georgia Sea Grant Shellfish Research Laboratory (SRL). This project evaluates the capability of the natural ecosystem ("green" components) as mechanisms to protect human built infrastructure ("gray" components) from degradation due to rising sea levels.

## Coastal Threats: The WHAT?

- By 2050, Georgia is projected to have 140,000 residents living in the 100-year flood zone due to rising sea levels and the in land migration of the flood zone.
- In Chatham County, over 54 miles of roads are poised to flood as they sit at or below 5.6 feet in elevation.
- Rising sea levels threaten to inundate homes, roads, and stormwater conveyance structures in Chatham County. The number of homes, roads, and structures impacted will markedly increase within the next 30 yrs.

## Burnside Island Causeway Project: The HOW?

This project will evaluate the effectiveness of implementing a gray/green approach to protect structures and provide guidance on design standards to protect Chatham County's infrastructure from rising sea levels and modify design plans to address changing ocean levels. Initially, CCDOE evaluated the causeway and stormwater systems (gray) for signs of impacts from increased inundation while SRL evaluated the biological components of the surrounding marsh habitat and identified areas alongside Burnside Island Causeway that would support enhancement, or plantings of ribbed mussels (green). SRL has spawned ribbed mussels, a native species, that will be planted and monitored for signs of growth and recruitment. Successful ribbed mussel populations has shown to support marsh stabilization. This gray / green approach is intended to stabilize the causeway's surrounding area in effort to extend the marsh's tidal buffering capability to protect the roadways and stormwater structures.

