SHORELINE ASSESSMENT AND

IMPLEMENTATION RESILIENCY PLAN

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Prepared by:
Goodwyn Mills Cawood, Inc.
1612 Newcastle Street, Ste. 218
Brunswick, GA 31520

Prepared for:
Glynn County, Georgia
City of Brunswick, Georgia
Jekyll Island Authority, Georgia

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Executive Summary

As a result of back-to-back hurricane events in 2016 and 2017 and the associated damage, Glynn County partnered with the City of Brunswick and Jekyll Island Authority (JIA) on a Coastal Incentive Grant, through Georgia Department of Natural Resources, Coastal Resources Division, to create a Shoreline Protection Implementation Plan (SPIP) that will find eco-friendly solutions to address current shoreline vulnerabilities and future shoreline hazards. For the purposes of this plan, "Shoreline Assessment and Implementation Resiliency Plan," shorelines include beach front, exposed marsh front, and river edges. This plan summarizes the approach and efforts and provides recommendations to enhance shoreline protection and resiliency.

A Shoreline Protection Task Force ("Task Force") was formed with City, County, and JIA staff to share information and formulate cohesive and linked efforts between all members to increase disaster resiliency countywide. The Task Force provided feedback throughout the planning process and met five times during the first phase of this project, as detailed in **Section 1.1**. Other Task Force members included: GADNR-CRD, Brunswick-Glynn County Joint Water and Sewer Commission, The Nature Conservancy, and professors from Stetson University, Georgia Southern, and Skidaway Institute of Oceanography.

The Task Force and consultant gathered environmental and coastal hazard data, land use, habitat, infrastructure, and other relevant local and regional datasets from local GIS staff and the Georgia Coastal Hazards Portal (GCHP) website. Available GIS data, along with input from staff and the general public, which is described in **Section 2.1**, were used to identify shorelines with the highest vulnerability to erosion and shoreline change. Feedback from the public was solicited at the Glynn County EM/HSA and Community Development Department's educational booth at CoastFest on October 5, 2019, in Brunswick. The public identified 27 locations with coastal erosion and king tide flooding, which were later reviewed with local staff to incorporate into a full project list. In fall 2019, the consultant completed a field tour with the JIA Director of Conservation and Land Manager and the City of Brunswick Public Works Director, and a virtual tour with the Glynn County Public Works Director to identify potential projects and issue areas related to erosion and king tide flooding. The consultant later completed inspections of these sites to assess the issues and determine potential solutions. From **Section 2.2**, other vulnerabilities that were identified in the previous Disaster Recovery and Redevelopment Plan (DRRP) efforts were also included in the assessment.

The Task Force reviewed shoreline protection best management practices. Overall, there was a general interest in natural practices, with noted interest in living shorelines, but these have historically had permitting challenges. It was discussed that more education is needed on these practices and to encourage alternatives to bulkheads. The Task Force discussed including nearshore shoaling and engineered sand nourishment in this plan because it may become necessary at some point and they do not want to restrict themselves. The comprehensive list of management practices discussed and the issues and opportunities identified from the Task Force are described in **Section 2.3**. The practices reviewed included: living shorelines, bulkheads/sea walls, rock revetments/jetties, rip rap, temporary beach access barriers, constructed dunes, sand/dune fencing, beach nourishment/re-nourishment, nearshore placement, land preservation, green stormwater infrastructure, tide control, streambank stabilization, and policy changes.

A matrix was developed as a step to prioritize individual projects and the most vulnerable shoreline segments that would have the greatest impact on community resiliency. **Section 3.1** describes how the matrix was developed, the factors included, and how each factor and project are scored. Nine factors were used to rank and score the projects for prioritization. The high-tier scoring factors (with a maximum score of 10 points) were infrastructure type, infrastructure proximity, and sea level rise Impacts. There was one mid-tier factor (7 points maximum) – erosion rate. The remainder were low-tier factors (5 points maximum) – flood zone, flooding frequency, low-moderate income status, ownership, and special habitat.

Moving from assessment to implementation, it is important to identify funding sources and potential partners, which are presented in **Section 4.1**. In working close to the shoreline, there are often permitting challenges that complicate scheduling, so these experiences are also described in **Section 4.1**. **Section 4.2** describes the overall results and recommendations to address areas with shoreline vulnerabilities. In total, 16 projects were identified in the City of Brunswick, 37 in unincorporated Glynn County (12 on mainland and 25 on St. Simons Island), and 14 on Jekyll Island. Prioritization is based on the calculated score from the matrix. Cost was included as a relative measure compared with other projects for that jurisdiction. This initial level of analysis is too early and broad to assign a specific value. The Potential Partners/Project Lead were identified based on property ownership and potential granting or coordinating agencies. The Proposed Solutions and Alternates were developed based on the review of best management practices, where there was a general interest in natural practices.

A secondary goal of this project was to incorporate components of a Beach Management Plan in order to be eligible for grants and programs from FEMA or Army Corps for mitigation efforts on the public beaches in Glynn County. Of the three jurisdictions in this plan and project, only Glynn County and Jekyll Island have ocean-facing beaches, so St. Simons Island and Jekyll Island are the focus of **Section 5**. The Beach Management section includes: *Background/History* (**Section 5.1**), an overview of *Beach Profile Inventory* and recommendations for data management (**Section 5.2**), summary of locations for *Public Beach Access* (**Section 5.3**), state and local *Policies and Laws* **(Section 5.4**), *Shoreline Protection Ordinance Review* (**Section 5.5**), *Environmental Considerations* for water quality monitoring, wildlife, and stormwater management (**Section 5.6**), and a listing of *Current and Future Beach Management Practices* (**Section 5.7**).

A summary and recommendations for implementation of this plan are included in **Section 6**. This plan also includes several appendices for additional information. This includes detailed matrix results in **Appendix A**, full-size maps of shoreline vulnerability projects in **Appendix B**, photos from sites with erosion issues in **Appendix C**, Task Force meeting summaries in **Appendix D**, a listing of beach management resources used in Tybee Island's Beach Management Plan in **Appendix E**, and plan sheets for the "Johnson Rocks" rehabilitation project on St. Simons Island in **Appendix F**.

1. Introduction

As a result of recent hurricanes and associated damage, Glynn County, City of Brunswick, and the Jekyll Island Authority (JIA) have combined their efforts to protect the shorelines along the beach front, exposed marshes, and river edges countywide, by creating this "Shoreline Assessment and Implementation Resiliency Plan." From 1996 to 2017, Glynn County experienced 13 hurricane-related events, with Hurricanes Matthew in 2016 and Irma in 2017 causing extensive damage throughout the County. Hurricane Matthew grazed the southeast Georgia coast on October 6, 2016, as a Category 3 storm. Although the storm's eye remained approximately 60 miles off the Georgia coast, Glynn County still experienced severe tropical storm conditions. During Hurricane Matthew, the National Oceanic and Atmospheric Administration (NOAA) reported for Glynn and the surrounding areas, that there was 5 to 10 inches of rain, severe coastal erosion, and widespread flooding. NOAA also reported a storm surge of 3.18 feet with a maximum storm tide of 6 feet. Hurricane Matthew cost Glynn County approximately $11.4M in post-disaster recovery efforts.

Not even twelve months later, on September 11, 2017, Hurricane Irma, a Category 2 storm, affected this area with widespread flooding, power outages, and additional localized coastal erosion. The cause of the massive flooding was the elevated water levels of 1 to 2 feet above normal tide that occurred for several tidal cycles before Irma's surge and rainfall. The tidal gauge on St. Simons Island crested at 6.90 feet, and the total rainfall was 9.6 inches. Some coastal infrastructure, already weakened from Hurricane Matthew, suffered additional damages from Irma's storm surge. Glynn County incurred over $7M in post-disaster recovery efforts.

Although destructive water and wind forces were present during Hurricane Matthew and Irma, both storms only grazed the County. A typical Category 3 hurricane can bring 6 to 12 inches of rainfall and storm surge of 9 to 12 feet. A storm surge that may be superimposed on normal astronomical tides occurring in the fall can make these storms even more dangerous.

Unfortunately, the 2015 Hazard Mitigation Plan for Glynn County predicts that the probability of a reoccurrence of a similar storm is 60% during any given year. Compounded to this hazard, sea level rise will make hurricane-related flooding and storm surge more impactful. Although humans can do little to prevent hurricanes, they can influence the severity of the impact of these storms. A Shoreline Protection Implementation Plan will allow all three partners to mitigate future disasters and become more disaster resilient. If no action is taken in protecting the community's shorelines, not only is the area exposed to greater damages from future storms, but any actions taken post-storm would only provide a "band-aid" solution to a deeper problem.

Glynn County, the City of Brunswick, and the JIA previously partnered in 2016-2017 on a grant from GADNR, Coastal Resources Division (CRD), to develop a Brunswick-Glynn County Disaster Recovery and Redevelopment Plan (DRRP). The DRRP was finalized in early 2017 and adopted by the County in August 2017. The DRRP is intended to increase community resiliency and disaster mitigation by providing site specific response for short-term recovery, long-term recovery, and redevelopment strategies. Due to the back-to-back hurricane-related events in 2016 and 2017, Glynn County, City of Brunswick, and the JIA pursued another grant from GADNR-CRD to create a Shoreline Protection Implementation Plan (SPIP) that will draw from the recommendations set forth

in the DRRP. This is a multijurisdictional approach in trying to find the most eco-friendly solutions to future shoreline hazards. The first component of the SPIP is a Shoreline Assessment and Implementation Resiliency Plan, which is the focus of this document. The second component, a Sea Level Rise Response Implementation Plan, will be created and completed in fall 2020 to spring 2021.

Existing shoreline conditions were evaluated through this planning process in order to provide a greater understanding of erosion problems, deterioration of existing protection walls, and/or any natural barriers that may have eroded due to the recent hurricanes. Additional information about existing gaps, needs, and overall current shoreline management will lead to more rational mitigation actions and appropriate selection of alternative solutions. This evaluation will be conducted with the assistance of the requested consultant and the Shoreline Task Force.

For the purposes of this plan, shorelines will include beach front, exposed marsh front, and river edges, as appropriate. This initial phase considers the following:

- Data gathering of environmental and coastal hazard data, land use, habitat, infrastructure, and other relevant local and regional datasets from local GIS staff and the Georgia Coastal Hazards Portal (GCHP) website.
- Review of available data and solicit feedback from staff (Task Force) to identify shorelines with the highest vulnerability to erosion and shoreline change.
- Creation of a matrix to rank shoreline segments for vulnerability and to prioritize individual projects that would have the greatest impact on community resiliency.
- Review and analysis of shoreline protection best management practices that emphasize minimal armoring and consider sea level rise adaptation, as well as beach sand control alternatives, such as sand fencing, native plants, and engineered sand nourishment.
- Review of ordinances related to shoreline protection and Shore Protection Act, specifically state and local requirements for setbacks, and identify recommendations to enhance shoreline protection.
- A final report that will summarize the approach and efforts and provide recommendations.

1.1. Shoreline Protection Task Force

Glynn County was the lead applicant for the Coastal Incentive Grant (CIG) that funded this project, and the City of Brunswick and the JIA are partners included in the CIG. As a result, the Shoreline Protection Task Force ("Task Force") is mostly comprised of City, County, and JIA staff. These partners agreed to share information and formulate cohesive and linked efforts between all members to increase disaster resiliency countywide. The Task Force also includes members from GADNR-CRD to provide input and feedback on technical matters and to ensure that the plan follows the Shore Protection Act (O.C.G.A. Section 12-5-230 et. seq.). Other Task Force members include: Brunswick-Glynn County Joint Water and Sewer Commission (BGJWSC), The Nature Conservancy, and professors from Stetson University, Georgia Southern, and Skidaway Institute of Oceanography. As Glynn County is the primary grantee, the Assistant County Manager and staff in the Emergency Management/Homeland Security Agency (EM/HSA) and Community Development

Department also serve on the Project Team, by coordinating Task Force logistics and grant/project deliverables.

The Task Force provided feedback throughout the planning process and met five times during the first phase of this project. A brief summary of each meeting is described in Table 1.1, and detailed meeting summaries are included in Appendix D. An initial Kickoff Meeting was held on January 25, 2019, with City, County, JIA, and BGJWSC staff. In spring 2019, the County issued an RFP to hire a consultant to assist with Task Force facilitation and plan development. Goodwyn Mills and Cawood (GMC) was the consultant selected and received the NTP on July 12, 2019. The first Task Force meeting led by GMC was held on August 6, 2019. This included a Project Team meeting with the County and Task Force Meeting with all parties. The next several months focused on data gathering and meeting with City and County Public Works and Engineering staff and the JIA Conservation staff to identify issue areas and potential projects. Following the data collection period, another set of Project Team and Task Force meetings were held on January 6, 2020, to solicit additional feedback from the Task Force on preferred management practices and to review current project lists and available datasets. GMC used the results of the January meetings to create a matrix to rank and prioritize individual projects and general shoreline segments. The procedure and results were presented to the Task Force at the February 28, 2020, meeting. During the Task Force and Project Team meetings, schedules and plans were discussed for a joint Commission/Board meeting with JIA, BGJWSC, City, and County officials on March 17, 2020. However, this meeting was cancelled due to COVID-19. The same presentations were rescheduled to occur for each Commission/Board separately in September 2020.

Table 1.1: Summary of Task Force and Project Team Meetings.

Date	Meeting Type	Activities
1/25/2019	Task Force #1 (Kickoff)	• History, background, and need for project • Plan for Glynn County, City of Brunswick, JIA, and BGJWSC (Task Force Members) • Plan to release RFQ for consultant assistance • Presentation by Dr. Chester J. Jackson at Georgia Southern University on benefits of sand dunes, pros and cons of block barriers, standardized sand study, and recommendations for factors of concern
8/6/2019	Project Team #1	• Review of previous work • Discussion of project scope, and roles for GMC, County, and Task Force • Review Task Force List • Discussion of County's goals
8/6/2019	Task Force #2 (GMC Kickoff)	• Discussion of project scope, and roles for GMC, County, and Task Force • Discussion of project goals for Task Force members • Community engagement plans • Request for data/information sharing
10/8/2019	House & Senate Natural Resources & Environment Committees	• Presentation at Environmental Academy, led by UGA Carl Vinson Institute of Government • Kathryn Downs (County) and Rob Brown (GMC) presented project description, progress, and planned activities; received positive feedback and interest from the attendees
1/6/2020	Task Force #3	• Updates on data gathering and outreach activities since August meeting • Four "Stations" set up to solicit feedback from the Task Force: (1) Hot Spot and Vulnerable Areas, (2) Background Data (GIS Datasets), (3) Management Practice Preference Survey, and (4) General Discussion on Partners/Funding Sources/Grant Opportunities/Permitting Challenges
1/6/2020	Project Team #2	• Met to discuss action items and plans for upcoming month and until the next Task Force Meeting in February
2/28/2020	Task Force #4	• Presentation of matrix factors and results to rank/prioritize individual projects; discuss modification of some factors • Presentation of matrix on countywide-scale to identify vulnerable shoreline segments • Present and discuss beach profile data • Discussion of next steps: draft plan, joint presentation with City/County/JIA Commissions/Boards on 3/17/2020 (cancelled due to COVID-19)
2/28/2020	Project Team #3	• Met to discuss logistics for the joint Commission/Board presentation – timeline for updated PowerPoint and updated project list
7/9/2020	Project Team #4	• Revisit schedule for closing out Year #1 and kicking off Year #2 of CIG
8/28/2020	Task Force #5	• Review draft plan and discuss comments

2. Shoreline Assessment

The first phase of the shoreline assessment was conducted through soliciting input from multiple sources on locations of coastal erosion, king tide flooding, and general vulnerable areas. Section 2.1 describes a public engagement event at CoastFest 2019, as well as field inspections and review of vulnerable areas with local public works and conservation staff. The second phase, described in Section 2.2, was to investigate previous planning efforts, which focused on a review of the Disaster Recovery and Redevelopment Plan (DRRP) process. Section 2.3 highlights a review and analysis of best management practices for shoreline protection. An initial list was presented to the Task Force, and it was expanded with discussion at the meeting. A list of issues and opportunities identified by the Task Force for each practice is included in this section.

2.1. Public/Staff Input and Field Inspections

The process and results from input received by the public and staff on vulnerable shoreline areas are described in Section 2.1.1 and 2.1.2, respectively. Based on the locations identified from these sources, the consultant completed inspections of these sites to assess the issues and determine potential solutions. The Task Force had an opportunity to review the complete list of projects and vulnerable areas to vet this list and provide any additional locations that were missing.

2.1.1. CoastFest – Public Input

The Glynn County EM/HSA and Community Development Department regularly have an educational and interactive booth at CoastFest to display resources and educational materials from their respective departments. CoastFest is a public event organized and facilitated by GA DNR-CRD and held the first Saturday in October. The 2019 event, held on October 5th, had 12,500 visitors. Glynn County included a station to solicit public input on this project. A map of the County with historical shoreline change data was presented with red being areas with erosion and blue being accretion. County staff and the consultant were present all day to talk with the public and describe the feedback station, as depicted in Figure 2.1. Attendees placed small, numbered sticky dots on locations where there were areas with coastal erosion (orange dots) and king tide flooding (purple dots). There was a corresponding table on a clipboard for participants to add comments and a detailed address. From this event, 27 locations were identified and later reviewed with local staff to incorporate into a full project list.

Figure 2.1: Coastal Erosion and Shoreline Change Activity at CoastFest 2019.

2.1.2. Field Inspections with Staff

The consultant took a field tour with the JIA Director of Conservation and Land Manager on November 5, 2019, and the City of Brunswick Public Works Director on November 8, 2019, to identify potential projects and issue areas related to erosion and king tide flooding. The consultant met with the Glynn County Public Works Director on December 4, 2019 to review maps and take a virtual tour via GoogleMaps. In total, there were 21 potential projects and issue areas identified on Jekyll Island, 13 in City of Brunswick, and 37 in unincorporated Glynn County, with 24 of 37 being on St. Simons Island, as described in Table 2.1. Based on the field visits with local staff in fall 2019, there were 69 potential projects identified, with 58 being specific projects and 11 as general projects and problem areas. The issues were broken down by type: 40 with flooding, 15 with erosion, 13 with both, and one being some other type of issue. Distribution of issue type and location is presented in Figure 2.2.

Table 2.1: Summary of Shoreline Assessment Activities with Staff and the General Public.

Date	Meeting Type	Activities
10/5/2019	Public Activity	• Presentation of shoreline change dataset at Glynn County's Coastfest Booth • A total of 27 projects experiencing King Tide Flooding and Coastal Erosion were identified
11/5/2019	JIA Director of Conservation and Land Manager	• Identified 21 potential projects/issue areas on Jekyll Island • Several sites from Public Input were confirmed or removed based on local knowledge
11/8/2019	Brunswick Public Works Director	• Identified 13 potential projects/issue areas in City of Brunswick • Several sites from Public Input were confirmed or removed based on local knowledge
12/4/2019	Glynn County Public Works Director	• Identified 37 potential projects/issue areas in unincorporated County – 24 on St. Simons Island • Several sites from Public Input were confirmed or removed based on local knowledge

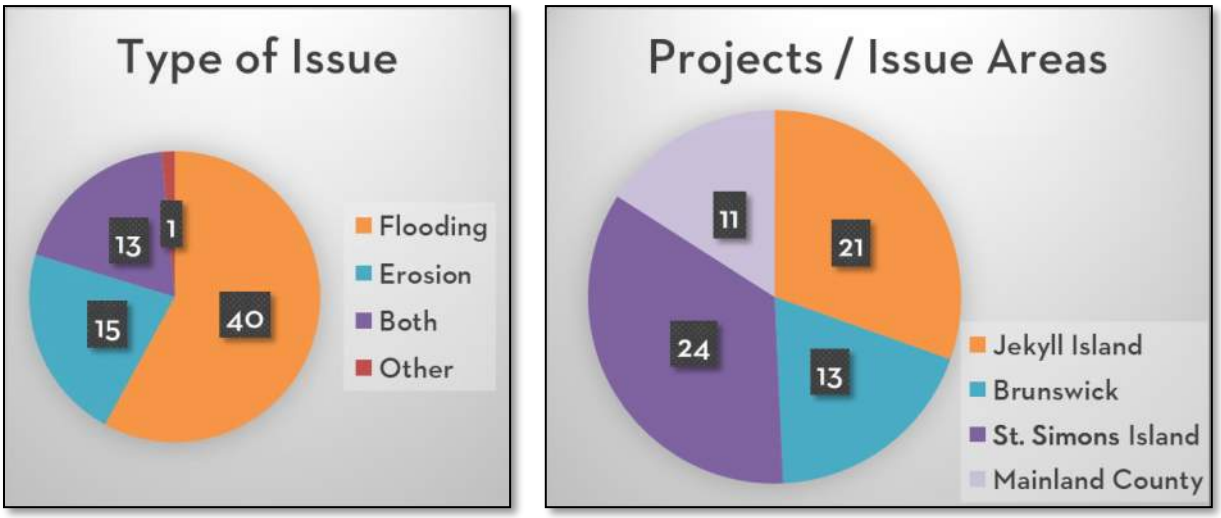


Figure 2.2: Issue Type (left) and Project Locations (right) based on Field Visits with Local Staff in Fall 2019.

This list was presented to the Task Force at the January 6, 2020, meeting to review and determine if other projects were missing. This list was refined to the final list presented in the next section.

2.2. Review of Previous Planning Efforts (DRRP)

The consultant also reviewed the May 2, 2017, meeting notes and feedback from public input session for the County's Disaster Recovery and Redevelopment Plan (DRRP) process to ensure that relevant information gathered in that planning process was conveyed to the shoreline protection project. The DRRP groups participated in two mapping exercises. In the first, they reviewed maps depicting future land use, county buildings, zoning areas, and areas of growth. The second exercise focused on sea level rise impacts. These groups highlighted areas of concern and developed redevelopment strategies for managing these concerns to facilitate recovery and redevelopment. Key and relevant areas of concern were incorporated into the project list for the Shoreline Protection Implementation Plan. A summary of key findings from the first mapping exercise includes:

- Within the City of Brunswick, ordinances should be put in place to require elevation of low-lying areas. To secure access to these areas, surrounding infrastructure (e.g., access roads) may need to be elevated as well. It is not feasible to relocate the city, so these ordinances are critical to support future recovery and redevelopment operations. This should include the schools and other critical infrastructure located within the City of Brunswick (e.g., hospital). This concept should be applied to other low-lying areas throughout the county to minimize repetitive losses.
    - Similarly, ordinances should be put in place regulating the placement of utilities to minimize disruption following an event (e.g., some utilities should be placed underground to minimize damage during a storm).
- At the north end of St. Simons Island, the group recommended the low-density area be converted to green space.
- In the event that a significant portion of businesses are destroyed, the area surrounding the airport should be prioritized as a redevelopment area where businesses could relocate.
- Reopening and providing housing for employees of St. Simons Island, Sea Island, and the Federal Law Enforcement Training Center (FLETC) should be prioritized because they are huge economic drivers within the county. Tourism is another key economic driver, so providing housing or disaster support services to individuals in the restaurant and hospitality industries should be considered.
    - These services, processes, and post-disaster resources should be communicated to these employees and other low-income residents to encourage them to return to Glynn County following an evacuation. It is critical that low-income or marginalized residents understand there is work and support available within the county.
- Review and update zoning policies to reflect current uses.
- Use of pervious pavement and other green infrastructure should be prioritized in industrial areas.
- Consider leaving some structures in downtown Brunswick unfinished or repurposing them to become open/public spaces.
- Maintain or create redundancies in critical infrastructure across the county.
- Prioritize reopening the Jekyll Island Convention Center, as it is a prominent economic driver on the island.

Overview and key findings from the second mapping exercise on sea level rise were:

- Glynn County (as a whole)
    - The county's water treatment facility in the City of Brunswick is in a poor location and should be relocated.
    - Critical IT infrastructure should also be relocated. The group suggested moving it to the county's police department.
    - Development of low-lying areas should be limited by ordinances/zoning.
- St. Simons Island
    - Elevate roads and causeways.
    - Relocate the waste water treatment plant and/or create a second facility at a new location to create redundancy.
    - Create ordinances mandating elevation of homes, businesses, and critical facilities and surrounding infrastructure.
    - Create redundant access roads to the hospital or raise the existing infrastructure to ensure the hospital is still accessible in the future as the sea level rises.
- Jekyll Island
    - Develop strategies to mitigate the following access concerns: road access at the southern end of the island, air traffic, access via main roads, and access to recreational fishing and trails.
    - Jekyll Island also faces potential loss of revenue resulting from impacts to a local golf course, access to hiking and fishing, loss of housing development areas and marinas, and public parks. Additionally, the island's water treatment facility will be impacted.
- City of Brunswick
    - Significant portions of the city's building stock will need to be elevated.
    - There is only one causeway providing access to St. Simons Island. Redundant infrastructure is critical.
    - If certain public facilities are destroyed during a disaster, they should be evaluated for relocation (e.g., public parks, athletic fields).
    - Sea level rise will likely impact the historic district and historic preservation policies.
    - Glynn Academy School will eventually be impacted by sea level rise. The county should consider relocation or elevation.

2.3. Analysis of Best Practices

Some of the initial objectives for this project were to consider approaches to protect shorelines with minimal armoring so that they could also adapt to sea level rise and ultimately increase community resiliency. Other objectives included analyzing beach sand control alternatives such as sand fencing, native plants, and engineered sand nourishment, as well as researching other tools.

At the January 2020 Task Force Meeting, the stakeholders were given a general survey of preferred management practices. Overall, there was a general interest in natural practices, with noted interest in living shorelines, but these have historically had permitting challenges. Task Force members mentioned that there are cascading effects of bulkhead use. When one is present, neighboring future development wants to follow course and use bulkheads too. It was discussed

that more education is needed on these practices and to encourage alternatives. The Task Force discussed including nearshore shoaling and engineered sand nourishment in this plan because it may become necessary at some point and they do not want to restrict themselves. Table 2.2 describes scale, context, and description of each management practice. Issues and opportunities were also identified from Task Force input, and a few representative photo examples are provided from sites in Coastal Georgia, mainly in Glynn County.

Table 2.2: Management Practice Description and Summary, with Input from Task Force.

Management Practice & Description	***Issues & Opportunities*** (Input from Shoreline Task Force)	***Photos*** *(from Coastal Georgia)*
1. Living Shorelines ***Scale***: shoreline ***Context***: coastal; rural to urban ***Description***: bioengineering combined with native vegetation; adjacent to estuarine waters. In Georgia, this typically includes oyster reef creation.	• Public acceptance and interest is high. • Allows natural connections between aquatic environment and adjacent upland; preserves tidal exchange; sediment conservation; allows for marsh migration. • Permitting challenges are significant. It is easier to permit bulkheads than living shorelines. • Currently construction is more expensive than bulkheads. • There is a need for high-profile demonstration projects that the public can access. • Projects can be complex.	 *Source: GADNR-CRD*
2. Bulkheads / Sea Wall ***Scale***: shoreline ***Context***: coastal; suburban to urban ***Description***: hard armoring of the shoreline. Can often be wood, concrete, or other hard building material. A wall is created at the upland/marsh interface and backfilled to raise upland.	• People feel safer, they want a static shoreline. • Hardened shorelines disrupt sediment movement and transport patterns. • Causes erosion on subject and neighboring properties. • Starts a "chain" effect where once one property has a bulkhead, neighboring properties want the same. • Education is needed because contractors often recommend this solution. • Use allowed adjacent to the marsh, i.e. pools and patios, often requires a bulkhead and fill. • Are exempted in the Marshland Protection Act, which incentivizes this over other solutions.	 

Management Practice & Description	***Issues & Opportunities*** (Input from Shoreline Task Force)	***Photos*** *(from Coastal Georgia)*
3. Rock Revetments & Jetties ***Scale***: shoreline, beach ***Context***: coastal; suburban to urban ***Description***: hard armoring, expensive, designed to absorb wave energy and to reduce erosion. Can disrupt natural sediment transport.	• Two major rock revetments in Glynn County: Johnson Rocks and Jekyll Island. • County was pursuing an expansion of the kneewall at Neptune Park from the Pier to the Lighthouse as part of SPLOST 2020. • Politically popular because the public can see the solution. • County is primarily interested in maintaining what they have, not building new ones. • Sea Island just installed a jetty at the bottom of the island which will have an impact on sand transport to St. Simons Island.	
4. Rip Rap ***Scale***: Shoreline, channels ***Context***: coastal and upland; rural to urban ***Description***: deploying smaller rocks of varying sizes to slow flow and stabilize eroding banks.	• Very common technique. • Allows for some natural vegetative growth. • Less expensive option. • Used to stablize Blythe Island boat ramps.	
5. Temporary Beach Access (w/ Barrier) ***Scale***: shoreline ***Context***: coastal; suburban to urban ***Description***: mechanism to block flow of water through a low-lying beach access point. This involves local stockpiling of materials near the entrance that can be quickly mobilized for the creation of a temporary barrier when a storm or high tide is forecasted.	• Only requires a Letter of Permission (LOP). • For emergency flood mitigation during hurricane season. • This requires the availability of beach quality sand. • Public Works was supportive of this option.	

Management Practice & Description	***Issues & Opportunities*** (Input from Shoreline Task Force)	***Photos*** *(from Coastal Georgia)*
6. Constructed Dunes ***Scale***: shoreline ***Context***: coastal; suburban to urban ***Description***: restore dunes and block flow from low-lying beach access points, hardened structure beneath dunes.	• Temporary dunes (less than 6 months) require an LOP only. Permanent Dunes must have a Shore Protection Act (SPA) permit. • If you are going to go through the trouble of building, they should be permanent. • Proprietary product PermaShield™ has been used for structural support to build dunes on Tybee Island (Guardian Retention Systems). • Pedestrian and vehicle access can be allowed over the dune, if designed accordingly.	
7. Sand / Dune Fencing ***Scale***: shoreline ***Context***: coastal; rural to urban ***Description***: fencing used to force windblown sand to accumulate in a desired place and build up the dune, also used to prevent foot traffic from damaging the dune system.	• Has been successfully deployed throughout Glynn County. • Inexpensive and more natural way to build dunes, but the timeframe for a mature dune is much longer. • It is an effective way of keeping foot traffic out of the dunes. • It is a politically popular measure.	
8. Beach Nourishment/Re-nourishment ***Scale***: shoreline ***Context***: coastal; suburban to urban ***Description***: process by which sand lost through erosion is replaced from other sources, typically a repetitive process because it does not remove the physical forces but mitigates their effects.	• Glynn County attempted to permit a beach nourishment project in the 1990s, and it was met with a lot of resistence. • It is likely that this would still be publicly unpopular. The County could conduct a survey to gauge public acceptance. • Glynn County is missing out on an opporutnity to participate in the ACOE Sand Sharing project because no projects are identified. • There are eroding beaches on Jekyll Island and St. Simons Island.	 *Source: WTOC 11*

Management Practice & Description	***Issues & Opportunities*** (Input from Shoreline Task Force)	***Photos*** *(from Coastal Georgia)*
9. Nearshore Placement ***Scale***: shoreline ***Context***: coastal; suburban to urban ***Description***: placement of sand near-shore, but not directly on the beach to buffer wave energy and to allow natural shoaling processes to deposit additional sand and build the beach.	• This option may have more public acceptance as it mimics natural processes. • There is interest in modeling this BMP to determine where it would be appropriate. • Has already been successful on Ft. Pulaski which is subject to erosion from shipping channel waves. • Was also used on Tybee Island as part of their Beach Management Plan. • JIA is interested in this approach ("Sand Motor") as an option to protect northern end of the island.	
10. Land Preservation ***Scale***: landscape, watershed, community, shoreline ***Context***: coastal and upland; rural to urban ***Practices***: natural land and open space preservation, conservation easements, establishing parks and greenways.	• This is popular but an expensive option. • The County should prioritize preservation of natural lands that will allow for marsh migration as sea levels rise. • Available SLAMM (Sea Level Affecting Marshes Model) data that identifies marsh migration potential could be used to identify areas the County can target for conservation. • Provides a lot of CRS credit.	
11. Green Stormwater Infrastructure ***Scale***: community, site ***Context***: coastal and upland; suburban to urban ***Practices***: bioretention, bioswales, rain gardens, permeable pavement, stormwater planters.	• This is becoming a popular option. There are active projects already in the County, on Jekyll Island, and in Brunswick. • Maintenance is challenging. • Public acceptance is high. • Promotes infiltration and water quality treatment, reduces impervious surfaces and stormwater runoff, and provides ecological services.	

Management Practice & Description	***Issues & Opportunities*** (Input from Shoreline Task Force)	***Photos*** *(from Coastal Georgia)*
12. Tide Control ***Scale***: watershed, storm sewer system (MS4) ***Context***: coastal and upland; suburban to urban ***Practices***: Tide gates, tide flaps. ***Description***: placed at the storm sewer system outlet to prevent tidal water from flowing back up into the storm sewer.	• Tide control structures allow for the storm sewer system to have capacity available for rain events during higher tide periods, and they prevent "sunny-day" flooding. • There is a regular maintenance requirement to keep the tide gates or flaps operational; they can be blocked open with debris and lose functionality. • These are used in some areas of the City and County.	
13. Streambank Stabilization ***Scale***: community, site ***Context***: coastal and upland; suburban to urban ***Practices***: Geo-textiles, staking, log structures, rip rap, stone structures.	• More pleasing "natural" look. • Can often use on-site materials. • Designed for habitat. • County is interested in this option. • Maintenance is an issue because private property owners often resist vegetation in ditches. There is the misconception that the vegetation slows flow, causes flooding and harbors snakes and mosquitos. • Education is needed. • Permitting may be an inssue where this is used to stablize natural channels. • The JIA completed a project using Filtrexx (picture to right), which is a proprietary type of "living shoreline."	 
14. Policy Changes ***Scale***: community ***Context***: planning & development ***Practices***: Shore Protection Act, Permitting, Buffers.	• Create buffers around land use. • Address permitting difficulties with Living Shoreline and the inherent "incentive" the MPA exemption for bulkheads creates. Consider creation of a "Nationwide"- type permit for Living Shorelines. • Address conflicts between SPA jurisdictional line determination and the Glynn County Shoreline Protection ordinance. • Review uses allowed in the County Shoreline Protection buffer to see if they are appropriate.	

A new tool/product that has not been implemented in Glynn County is a proprietary product PermaShield™ which is created by Guardian Retention Systems. This product is installed in the core of a constructed dune to provide storm surge protection and emergency vehicle access points. It has been used recently on Tybee Island for rebuilding their dunes. Pictures in Figure 2.3 and Figure 2.4 are from construction in January 2018 at 19th Street where a 6-ft PermaShield™ product was used to build an 8-ft dune. PermaShield™ was filled with local sand and included a mat material to allow emergency response vehicles and heavy equipment to drive up and over the dune. In spring 2020, additional installations for vehicle access points at 3rd Street and Gulick Street were also installed.

Figure 2.3: PermaShield™ being installed at 19th St on Tybee Island.
Photo Credit: Guardian Retention Systems

Figure 2.4: Before (left) and After (right) of PermaShield™ Constructed Dune on Tybee Island.
Photo Credit: Guardian Retention Systems

3. Shoreline Prioritization

A matrix was developed as a step to prioritize individual projects and the most vulnerable shoreline segments. GMC created the initial matrix following feedback received from the January 6, 2020, meeting, and it was presented at the February 28, 2020, meeting for feedback and refinement of factors and rankings. Section 3.1 describes how the matrix was developed, the factors included, and how each factor and project are scored.

3.1. Prioritization Approach (Matrix Development)

Most of the datasets used in the analysis were reviewed on the Georgia Coastal Hazards Portal (https://www.arcgis.com/home/item.html?id=2e2d61fad5d44e0c96995c38feb7052d). Some of the data layers were downloaded individually and added to a GMC-housed WebMap to evaluate and rank each individual project.

One of the key datasets used in determining areas with eroding shorelines and to prioritize projects was the "Shoreline Change Rate" dataset, that is available on the Georgia Coastal Hazards Portal at (https://gchp.skio.uga.edu/arcgis/rest/services/Server/GA_ShorelineChange/MapServer). Rates are presented as change in meters per year in 0.2-m intervals with greater than 1-m of erosion (–1.0) or accretion (+1.0) being the end groups, as presented in Figure 3.1. The shoreline change rates are based on conditions from the 1930s to 2000. The program to calculate these rates is AMBUR (Analyzing Moving Boundaries Using R, which was developed by Dr. Chester Jackson, a professor at Georgia Southern University. This digital tool is effective to analyze shoreline change along barrier islands with complex shapes and highly curved shorelines.

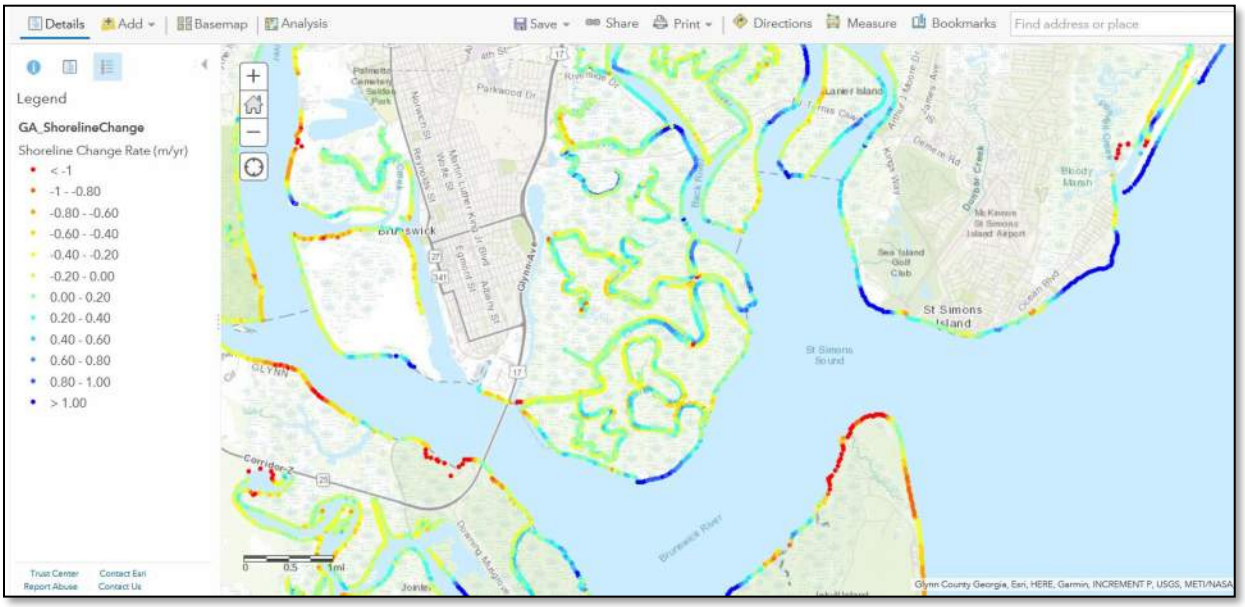


Figure 3.1: Example of "Shoreline Change Rate" Dataset.

The “Shoreline” line from the “Shoreline Change Rate” dataset is very important because it is used when calculating the distance of the shoreline to infrastructure of concern, and the rates are incorporated into an erosion rate factor. However, there are some minor channels where the “Shoreline Change Rate” data is unavailable. An example at the Palmetto Cemetery in Brunswick is presented in Figure 3.2. In this case and similar ones, current conditions and historical knowledge from staff were used to visually assess erosion condition and rate, and the edge of the eroding channel was used to measure distance to infrastructure.

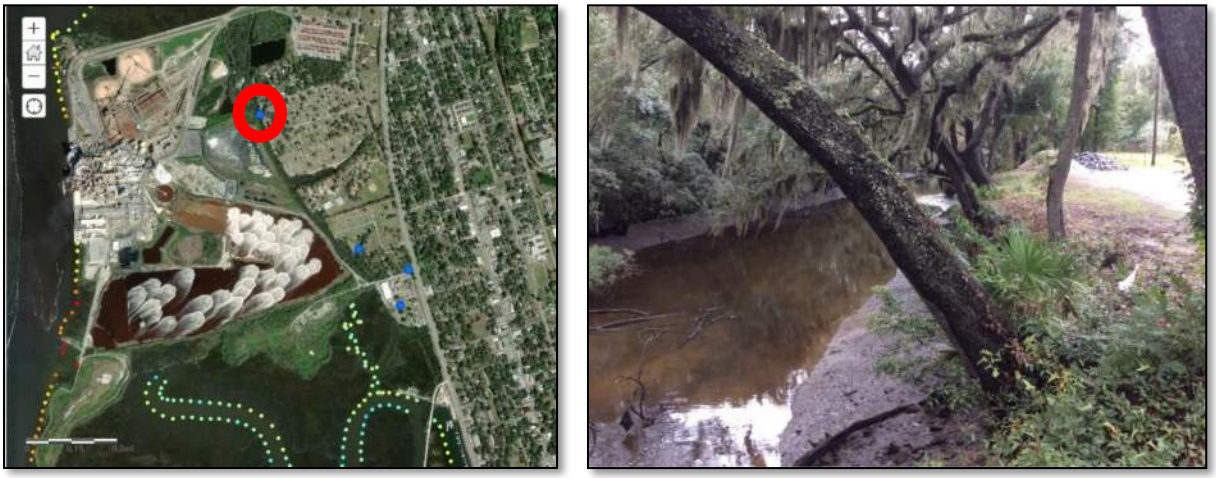


Figure 3.2: Example of Project Along Channel Without Shoreline Change Data Available.

Individual projects were identified and vetted by staff. Projects identified by the public were reviewed by the consultant and staff to determine applicability to this list. Nine factors were used to rank and score the projects for prioritization. They were prioritized into three ranking groups (10, 7, and 5) with three having a maximum score of 10, one with a maximum score of 7, and the remaining five with a maximum score of 5. Higher maximum scores equate to factors with more weight, and higher overall scores equate to higher prioritization. The factors and corresponding maximum score listed in parentheses is presented below:

- Infrastructure Type (10)
- Infrastructure Proximity (10)
- Sea Level Rise Impacts (10)
- Erosion Rate (7)
- Flood Zone (5)
- Flooding Frequency (5)
- Low-Moderate Income Status (5)
- Ownership (5)
- Special Habitat (5)

Infrastructure Type is a top-tier factor with a maximum rating of 10. Based on feedback from the Task Force, the highest rating was given to critical facilities, historical structures, and major roads. Also, residential structures were given higher priority over non-residential structures. The categories with five assigned scores are presented below:

- 10: major roads, critical facilities, historic structures
- 7: minor residential roads, residential structures
- 5: non-residential structures
- 3: recreation areas, parks
- 1: trails

Infrastructure Proximity is a top-tier factor with a maximum rating of 10. Not all project locations were adjacent to channels with "shoreline change rates" from the DNR-Coastal Hazards Portal, so proximity to an eroding channel was used if "shoreline change rates" were not available. An example calculation for the Riverside Drive Causeway, where shoreline change data is available, is presented in Figure 3.3. If there was active erosion that was closer to the infrastructure of concern, as presented in Figure 3.4 for the historic "Brewery Site" on Jekyll Island, the edge of the channel was used to calculate infrastructure proximity. A few examples of an eroding channel that did not have Shoreline Change data are presented in Figure 3.5 for "T Street Outfall at Academy Creek" in Brunswick and "Ocean Blvd Headwall Erosion" on St. Simons Island. In these cases, the distance to infrastructure was based on the edge of the eroding channel. The categories with five assigned scores are presented below:

- 10: ‹ 50 feet
- 7: 50 to 100 feet
- 5: 100 to 200 feet
- 3: 200 to 300 feet
- 1: 300 to 500 feet

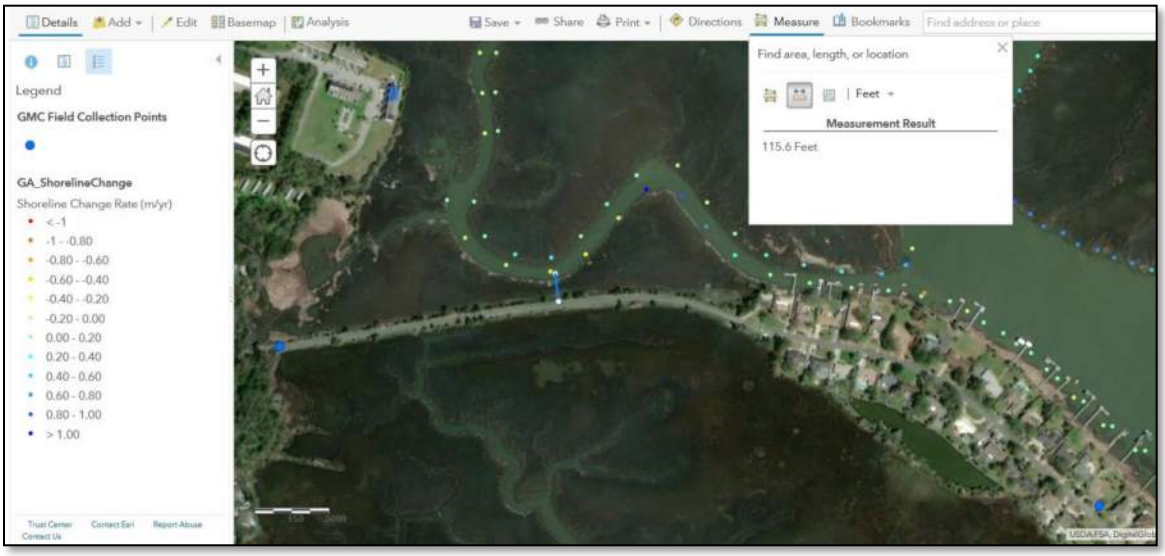


Figure 3.3: Example Calculation for Infrastructure Distance to Shoreline.

Figure 3.4: Example where Eroding Channel Outweighed Shoreline Change Rate Data.

Figure 3.5: Example Sites where Distances to Eroding Channel were Used.

In relating distance to erosion rate, the erosion rates were multiplied by durations to determine the impacted lengths by 2050, 2075, and 2100. A summary is presented in Table 3.1. Based on these results, 100-feet of erosion would occur by 2050 for areas with an erosion rate of -1.0 m/year, 2075 when the rate is -0.6 m/year, and 2100 when the rate is -0.4 m/year. An impact beyond 300 feet will only occur by 2100 for areas with an erosion rate of -1.2 m/year or greater.

Table 3.1: Calculation of Future Erosion Distance at Major Year Intervals.

Erosion Rate (m/yr)	Erosion Rate (ft/yr)	Erosion Length (ft)		
		2020-2050	2020-2075	2020-2100
–1.2	–3.9	–118	–217	–315
–1.0	–3.3	–98	–180	–262
–0.8	–2.6	–79	–144	–210
–0.6	–2.0	–59	–108	–157
–0.4	–1.3	–39	–72	–105
–0.2	–0.7	–20	–36	–52

Sea Level Rise Impacts is a top-tier factor with a maximum rating of 10. While shorelines shift due to erosion, they will also be shifting in the future due to sea level rise. The Sea Level Affecting Marshes Model (SLAMM) simulates potential impacts of long-term sea level rise on wetlands and shorelines (https://gchp.skio.uga.edu/arcgis/rest/services/Server/SLAMM/MapServer). The data for Glynn County was modeled by Dr. Jackson at Georgia Southern, and it has 18 land cover categories with results available in quarter century increments for either 1-m or 2-m of sea level rise. There is also a layer of "Upland to Wetland Transition" by 2050 and 2100 for 1-m of sea level rise. Due to the large number of land use conditions and that the transition zone only has two options, NOAA sea level rise (https://gchp.skio.uga.edu/arcgis/rest/services/Server/NOAASLR/MapServer) was explored as a surrogate for marsh migration. It also provided a clearer picture on a scenario when infrastructure would be inundated. Example conditions for 2-ft, 3-ft, and 4-ft of sea level rise are presented in Figure 3.6 as an overlay to individual project locations on St. Simons Island near King and Prince Resort and Ocean Blvd. The categories with five assigned scores are presented below:

- 10: 1-ft SLR Scenario
- 7: 2-ft SLR Scenario
- 5: 3-ft SLR Scenario
- 3: 4-ft SLR Scenario
- 1: 5-ft SLR Scenario or greater

Figure 3.6: Example of "NOAA Sea Level Rise" Data on St. Simons Island.

Erosion Rate is a medium-tier factor with a maximum rating of 7. This factor was included and given higher weight due to the Task Force's desire to account for projects that have both flooding and erosion. The data source was the Georgia Southern shoreline change dataset. If a channel was not in that data layer, then the evaluation was based on visual inspection. The categories with five

assigned scores are presented below, with shoreline change rates presented in parentheses and visual assessment in quotes:

- 7: "High" (› –1.0 m/yr)
- 5: "Moderate-High" (–0.6 to –1.0 m/yr)
- 3: "Low-Moderate" (–0.2 to –0.6 m/yr)
- 1: "Low" (0.0 to –0.2 m/yr)
- 0: None

Flood Zone is a low-tier factor with a maximum rating of 5. This factor was included to incorporate modeled flooding risk. Examples of flood zones overlaid on individual project locations on St. Simons Island and Brunswick are presented in Figure 3.7. The categories with four assigned scores are presented below:

- 5: VE Zone
- 3: A or AE Zone
- 1: Shaded X Zone
- 0: X Zone

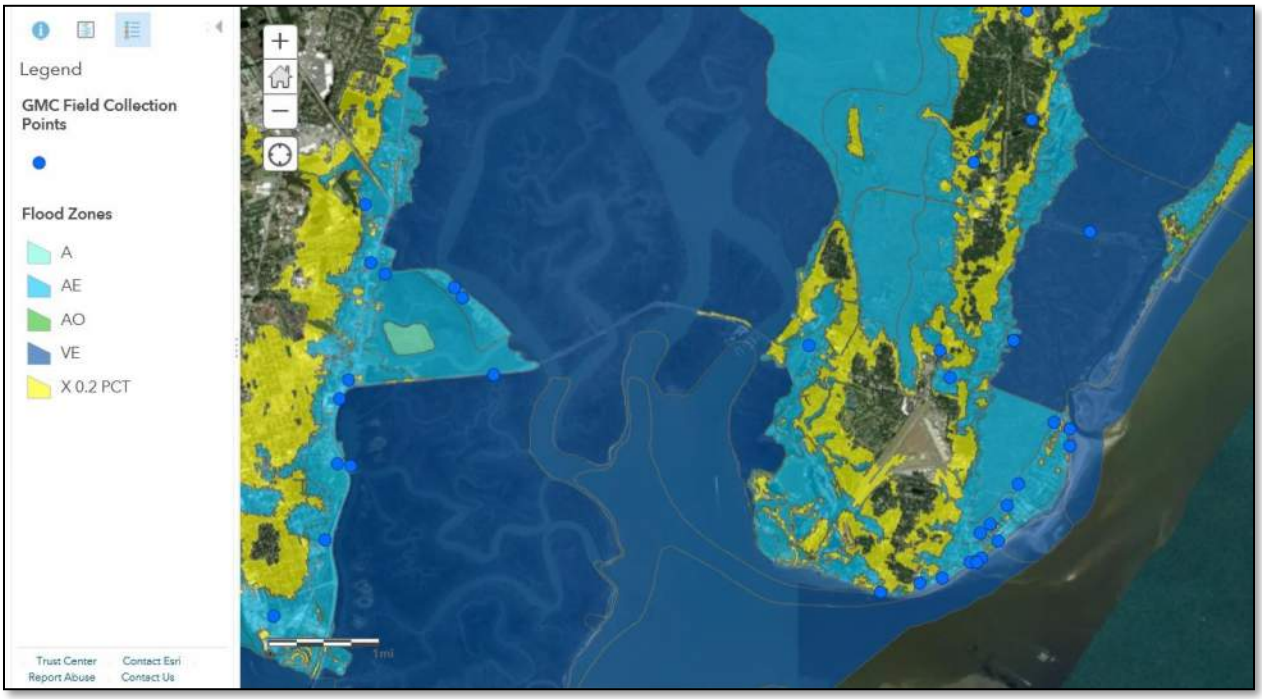


Figure 3.7: Example of "Flood Zone" Data on St. Simons Island and in Brunswick from the Digital Flood Rate Insurance Maps (DFIRM).

Flooding Frequency is a low-tier factor with a maximum rating of 5. This factor was included to incorporate recent impacts from hurricanes/tropical storms. The rating was based on feedback from local staff on whether a site experiences regular or King tide flooding, or if it flooded during

hurricanes Matthew (2016) or Irma (2017). The categories corresponding with the three assigned scores are presented below:

- 5: Regular / King Tide Flooding
- 3: Flooded during Recent Hurricanes Only
- 0: None

Low-Moderate Income Status is a low-tier factor with a maximum rating of 5. This factor was selected as a surrogate to incorporate vulnerable populations and grant eligibility. This specific criterion is used to determine eligibility for Community Development Block Grant (CDBG) funding, with greater than 50% being the threshold for prioritized eligibility. The scoring was determined based on the Census Block Group that the project was located within and corresponding CDBG Low- and Moderate-Income Data from the HUD Exchange (Department of Housing and Urban Development) for 2011-2015. The categories with three assigned scores are presented below:

- 5: › 50%
- 3: 40 to 50%
- 0: ‹ 40%

Ownership is a low-tier factor with a maximum rating of 5. This factor was included to incorporate ease for construction and coordination, where if a property is already owned by the local government, property acquisition is not required. The categories corresponding with three assigned scores are presented below:

- 5: Public / Local Government (City, County, JIA)
- 2: Other Government (School Board, BGJWSC, DOT, State, Federal)
- 0: Private

Special Habitat is a low-tier factor with a maximum rating of 5. This factor was included to incorporate protecting special habitats. The datasets used to rate this factor were from the U.S. Fish and Wildlife Services National Wetland Inventory (NWI). Freshwater and riverine wetlands from the NWI, as well as turtle and piping plover habitats (beaches) were assigned the highest score. If there is an existing seawall or bulk head present, the project would be rated as a '3' due to the hard feature impacting natural function. Armored shorelines were assessed in the field, and a dataset for "Armored Shoreline Distribution" was also explored on the Georgia Coastal Hazards Portal (https://gchp.skio.uga.edu/arcgis/rest/services/Server/Armored_Shorelines/MapServer). The categories with three assigned scores are presented below:

- 5: Habitat is Eroding/Vulnerable
- 3: Adjacent to Habitat or Hard Feature Impacting Natural Function
- 0: None

4. Shoreline Project Implementation

Moving from assessment to implementation, it is important to identify funding sources and potential partners. These topics are presented in Section 4.1 based on feedback received from the Task Force. In working close to the shoreline, there are often permitting challenges that complicate scheduling, so these experiences are also described in this section. Section 4.2 describes the overall results and recommendations to address areas with shoreline vulnerabilities. This section culminates the process to create a prioritized list of projects by combining the matrix approach from Section 3.1, analysis of best practices from Section 2.3, and potential funding sources and partners from Section 4.1.

4.1 Funding Sources, Other Potential Partners & Permitting Challenges

During the January 6, 2020, Task Force Meeting, one of the "stations" was a general discussion on partners, funding sources, grant opportunities, and permitting challenges. A list of funding sources and potential grant opportunities is provided below. One source of local funding is a future SPLOST. There were some funds set aside for implementation of projects in this plan in the 2020 SPLOST, but it was removed from the ballot in 2020 due to uncertainty associated with coronavirus. It is possible to be included on a future SPLOST.

Potential Funding Sources & Grant Opportunities:

- Future SPLOST
- CDBG-DR; CDBG to entitled communities; CDBG to non-entitled communities
- 319(h) Grant through DNR-EPD (U.S. EPA)
- Coastal Incentive Grant through DNR-CRD (NOAA)
- Army Corps of Engineers
- National Fish and Wildlife Foundation
- Communities of Coastal Georgia Foundation
- FEMA Public Assistance (after a storm)
- FEMA BRIC Program (Building Resilient Infrastructure and Communities), created to assist with resiliency (program is still underway with FEMA)
- NOAA funding to assist with resiliency
- Include the private sector to fund part of project(s)
- National League of Cities
- Creation of a Tax Allocation District (TAD) to fund part of the project(s)

Based on the funding sources, many of these organizations would be ideal project partners or project leads, such as Army Corps of Engineers, FEMA, GEMA, Georgia DCA, and Georgia DNR. Other project partners or project leads can be associated with property ownership, such as GDOT, Georgia Power, and Glynn County School System. It was suggested to connect with Tybee Island

since they have been through a similar process. GMC previously reached out to the consultant managing Tybee Island's Beach Management Plan, Alan Robertson, and he participated in a Task Force meeting and shared experiences from Tybee Island. GMC also coordinated a tour for the Glynn County, County Engineer, and the JIA Director of Conservation to highlight beach management practices and resiliency efforts by Tybee Island staff. A full list of potential project partners and project leads is presented below.

Project Partners or Project Leads:

- Local Jurisdictions: City/County/JIA/BGJWSC
- Army Corps of Engineers
- Emergency Management: FEMA/GEMA
- CDBG: Georgia DCA / HUD
- NOAA Grants: DNR-CRD / NOAA
- U.S. EPA Grants: DNR-EPD / U.S. EPA
- State Highways: GDOT
- Utilities: Georgia Power
- Schools: Glynn County School System
- FLETC – they might have additional funding sources available and if not, at least they should be involved in the conversations since they are heavily involved in re-entry and recovery processes
- Other Coastal Communities:
    - Tybee Island because they have been through some of these processes
    - Sea Island – They already have a shoreline protection plan in place; the intent is to have their plan reflect our goals and objectives
- Private organizations and/or businesses:
    - King and Prince – shoreline projects/activities will have a direct impact on them.
    - Georgia Ports Authority
    - Pinova
- Public: members of heavily flooded neighborhoods or representatives from HOA's
- Conservation Groups

The final topic discussed in this breakout group was permitting challenges. The following items were raised by the Task Force as challenges:

- It is easier to permit a project with hardened structures than natural structures (e.g., living shorelines).
    - Living shoreline permitting is by far more difficult than hardened permitting
- Length of time for permitting:
    - The internal process is too long.
    - Federal permitting is long and tedious.

    - DNR Committee's process is too long, and at times, it can hold up the process for a very long time.
- Other issues:
    - Shoreline Protection local Committee was mentioned as a primary issue.
    - Communication issues between multiple agencies (Army Corp, NOAA and DNR).
    - Timelines – having projects in a plan but not mapping out the timing of the permitting and making sure that if any "construction" is not scheduled during any nesting season or otherwise related.
- Comments from DNR permitting representative:
    - Timing depends on the size of the project. Anything under 0.1 acre, the permit does not have to go to the DNR local Committee, whereas, anything above that, it will need to go to the committee and abide or follow whatever requirements or condition they impose.
    - Suggested to make note of the changes to the Coastal Marshlands Protection Act that became effective January 1, 2020.

A list of recommendations that came from this discussion include:

- Expand the state's permitting process and do not rely so much on the Committee.
- Setup a pre-application permitting meeting with DNR. This will allow for timely feedback from DNR staff and possible suggestions to ease the process.
- Early in the process, list all projects with related timelines. During the creation of this list, make sure to include all permitting requirements, agencies and time restrictions.
- Map out potential supplies and vendors with a related timeline (from making the order, receiving the supplies, to paying out the vendors, etc.).

4.2. Matrix Results & Implementation Plan

The scores from the matrix, as described in Section 3.1, were calculated for each project. A summary of the scores for each individual project and jurisdiction is presented in Figure 4.1. Based on this graph, projects on Jekyll Island and in the City of Brunswick had higher scores due to presence of historical structures and special habitats on Jekyll Island, and impact of sea level rise and low-moderate income status in Brunswick. Since each jurisdiction will be funding and managing their own shoreline protection projects, the scoring for each was considered separately, and approximately one-third of the projects were assigned as near-term (highest priority), one-third as intermediate-priority (medium priority), and one-third as long-term (lowest priority). The distribution was not even thirds, but they were divided where there were clear breakpoints in the cumulate dataset in Figure 4.1. The distribution of projects and score ranges are presented in Table 4.1. The end result were 16 projects in the City of Brunswick, 37 in unincorporated Glynn County, and 14 on Jekyll Island. The unincorporated Glynn County projects were distributed with 12 on the mainland and 25 on St. Simons Island.

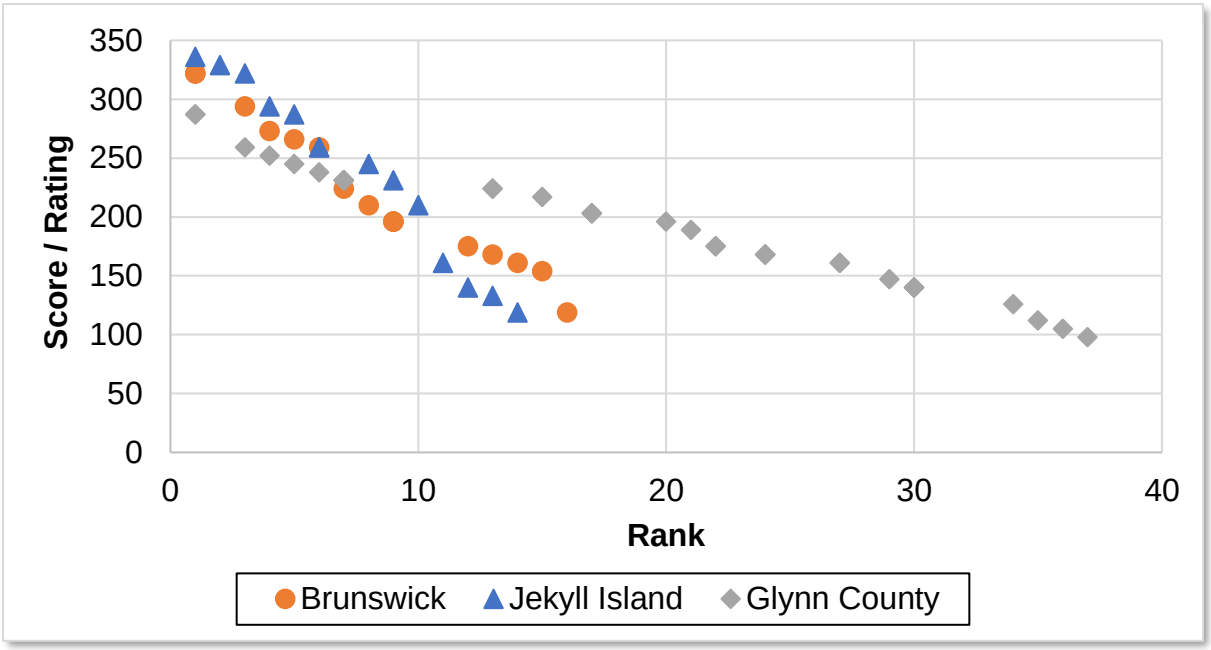


Figure 4.1: Summary of Scores for Individual Projects per Jurisdiction.

Table 4.1: Summary of Prioritization Matrix Results and Corresponding Numbers of Projects.

Prioritization Level	**Score Range** (*points from matrix calculation*)			**Total Projects**		
	City of Brunswick	**Glynn County**	**Jekyll Island**	**City of Brunswick**	**Glynn County**	**Jekyll Island**
Near-Term	259-322	231-287	287-336	6	12	5
Intermediate	196-224	168-224	210-259	5	14	5
Long-Term	119-175	98-161	119-161	5	11	4
Total				**16**	**37**	**14**

The next series of figures and tables present the shoreline protection project list. The summary tables include a Site ID, Site Description, Priority, Cost, Potential Partners/Project Lead, Proposed Solutions and Alternates. The Priority is based on the calculated score from the matrix and corresponding rank for each jurisdiction separately. Cost was included as a relative measure compared with other projects for that jurisdiction, so it is listed as either $, $$, $$$, or $$$$ for the range from lowest to highest cost. This initial level of analysis is too early and broad to assign a specific value. The Potential Partners/Project Lead were identified based on property ownership and potential granting or coordinating agencies. The Proposed Solutions and Alternates were developed based on Analysis of Best Practices in Section 2.4., where there was a general interest in natural practices. The Site ID in the table can be used to locate the project in the subsequent map/figure. A detailed and larger-scale set of maps is included in Appendix B. There are a few projects that have been partially addressed to note the current issue, but there is still a long-term solution needed to sustain future storms and sea level rise conditions.

Table 4.2: City of Brunswick Project List – Shoreline Assessment and Implementation Resiliency Plan.

Site ID	Site Description	Priority *(Based on Rank)*	Cost	Potential Partners / Project Lead	Proposed Solution	Alternates
B3	Palmetto Cemetery Erosion	Near-Term	$$	City	Living Shoreline	Rip Rap or relocate graves
B9	Marshside Grill Erosion and Flooding	Near-Term	$$	City / Private	Bulkhead/Sea Wall	Living Shoreline / Stream Stabilization
B8	Howard Coffin Park Ditch Erosion	Near-Term	$	City / BGJWSC	Living Shoreline	Rip Rap
B5	T Street Outfall at Academy Creek	Near-Term	$$	City	Living Shoreline	Rip Rap or relocate graves
B15	Flooding on Hwy 17 at Lanier Plaza	Near-Term	$$$	GDOT	Elevate Intersection	Relocate Road
B10	Riverside Drive Causeway	Near-Term	$$$	GEMA/FEMA, Army Corps	Raise Causeway	N/A
B4	Greenwood Cemetery Erosion	Intermediate	$	City	Living Shoreline/ Stream Stabilization	Rip Rap or relocate graves
B12	Lanier Blvd Flooding	Intermediate	$$$	City / School Board	Elevate Road; Add/ increase pipe size	Relocate Road
B6	Brunswick Landing Marina Sediment Accumulation	Intermediate	$$$	Marina	Living Shoreline	Dredge
B11	Riverside Drive Overtopping	Intermediate	$$$	GEMA/FEMA, Army Corps	Elevate Road; Reroute stormwater pipes	Regional SW Mgmt / Green Infrastructure
B16	Academy Creek WWTP	Intermediate	$$$$	BGJWSC, HUD, GEFA, GEMA/FEMA	Sea wall / bulk head	Relocate structure
B2	Flooding on Hwy 17 at Torras Causeway	Long-Term	$$$	GDOT	Elevate Intersection	Relocate Road
B1N	Riverside Drive Neighborhood Flooding	Long-Term	$$$$	GEMA/FEMA, HUD Army Corps	Tide Control; Regional SW Mgmt / Green Infrastructure	Elevate houses above BFE or Buy-outs
B7N	General: Flooding South of 4th Ave	Long-Term	$$$$	GEMA/FEMA, HUD Army Corps	Tide Control; Regional SW Mgmt / Green Infrastructure	Elevate houses above BFE or Buy-outs
B14	Flooding on Hwy 17 south of Redwood Street	Long-Term	$$	GDOT	Install tide gate	Elevate Road
B13N	Downtown Flooding	Long-Term	$$$$	GEMA/FEMA, HUD Army Corps	Tide Control; Regional SW Mgmt / Green Infrastructure	Elevate houses above BFE or Buy-outs

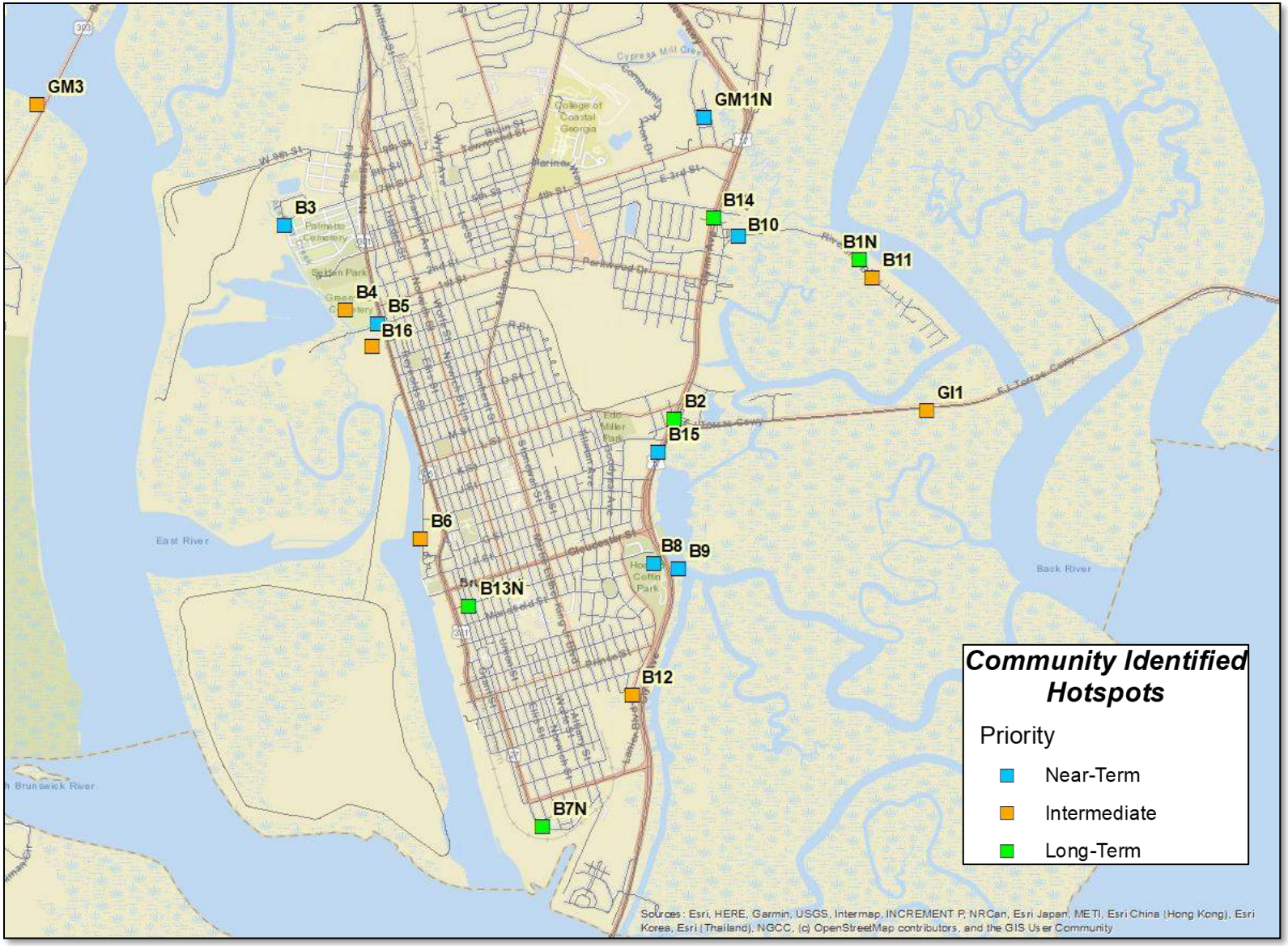


Figure 4.2: Map of Project Locations in City of Brunswick (B) and Nearby Glynn Mainland (GM).

Table 4.3: Glynn County (Mainland) Project List – Shoreline Assessment and Implementation Resiliency Plan.

Site ID	Site Description	Priority *(Based on Rank)*	Cost	Potential Partners / Project Lead	Proposed Solution	Alternates
GM5	Turtle River Park Boat Ramps	Near-Term	$$	County	Living Shoreline	Stream Restoration; Rip Rap
GM9	Altamaha Park Flooding	Near-Term	$$$	GEMA/FEMA, Army Corps	Elevate Roadway & Structures	Barrier (Bulk Head, Temporary)
GM11N	Dolphin/Trout/Bream/Pike/Bass Neighborhood Flooding	Near-Term	$$$$	GEMA/FEMA, HUD, Army Corps	Tide Control; Regional SW Mgmt / Green Infrastructure	Elevate houses above BFE or Buy-outs
GM7	Choke Point at Oak Grove Island Road	Intermediate	$$	GEMA/FEMA, Army Corps	H&H Modeling Study	Replace Box Culvert
GM4	Blythe Island / I-95 Erosion	Intermediate	$$$	GEMA/FEMA, HUD, Army Corps	Repair Rock Revetment	Increase Barrier (Rip Rap/Rock Revetment)
GM2	Turtle Creek Bridge	Intermediate	$$$	GDOT, Army Corps, GEMA/FEMA	Elevate Roadway	
GM3	Blythe Island Erosion	Intermediate	$	GDOT, County	Living Shoreline	Stream Restoration; Rip Rap
GM10	Pennick Road	Intermediate	$$	GEMA/FEMA, Army Corps	Pave Roadway; New Culverts	Elevate Roadway
GM1	Belle Point Parkway	Long-Term	$$	GEMA/FEMA, HUD, Army Corps	Elevate Roadway	Relocate Road
GM8	Hutchinson Ditch	Long-Term	$$$	GEMA/FEMA, Army Corps	H&H Modeling Study	Purchase Easements/Legal Investigation; Stream Restoration
GM12N	End of Crispen Blvd	Long-Term	$$$	GEMA/FEMA, HUD, Army Corps	Tide Control; Regional SW Mgmt / Green Infrastructure	Elevate houses above BFE or Buy-outs
GM6	River Ridge Rd Flooding	Long-Term	$	County	Larger Culvert	Elevate houses above BFE or Buy-outs

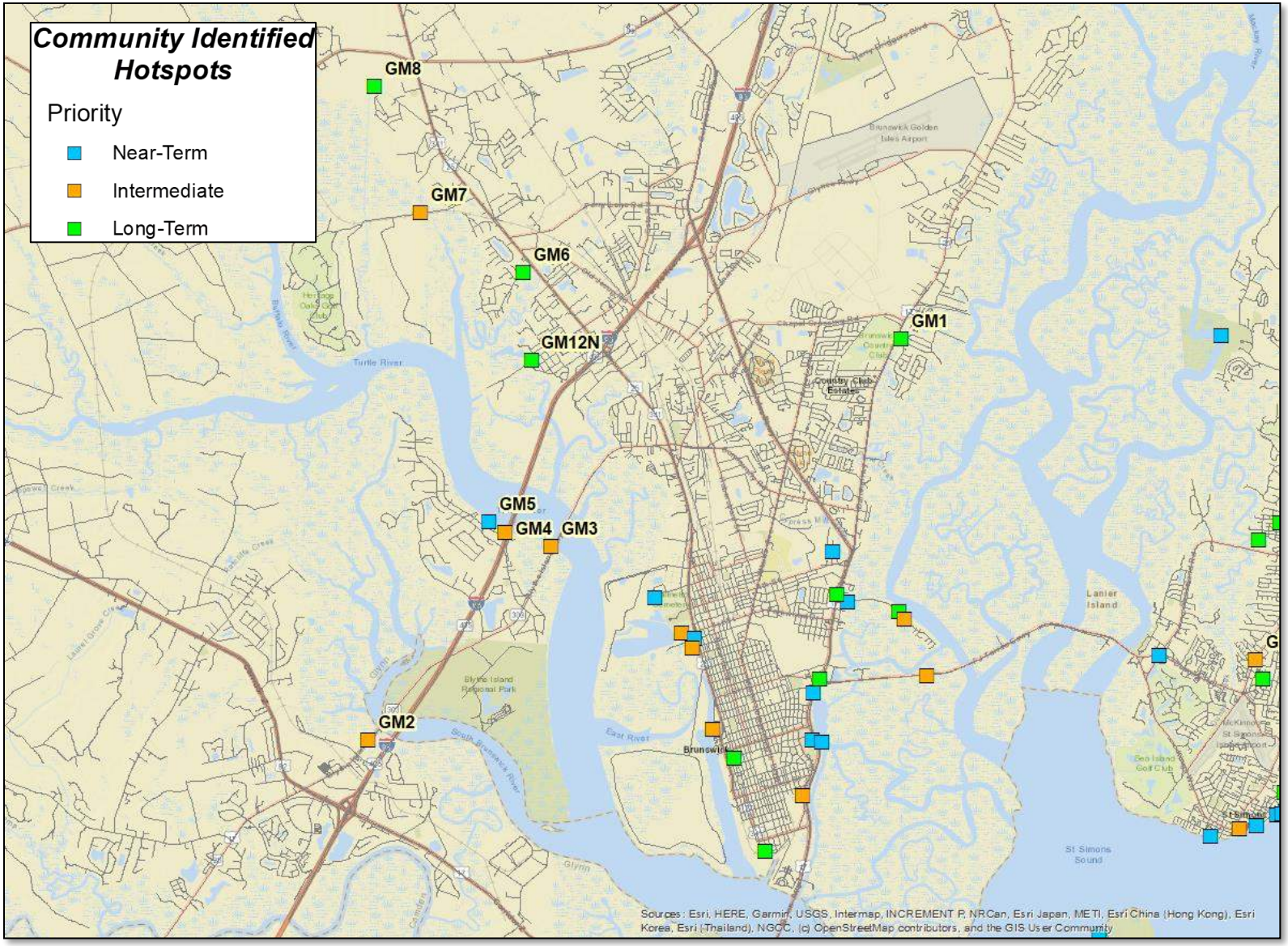


Figure 4.3: Map of Project Locations in Glynn Mainland (GM).

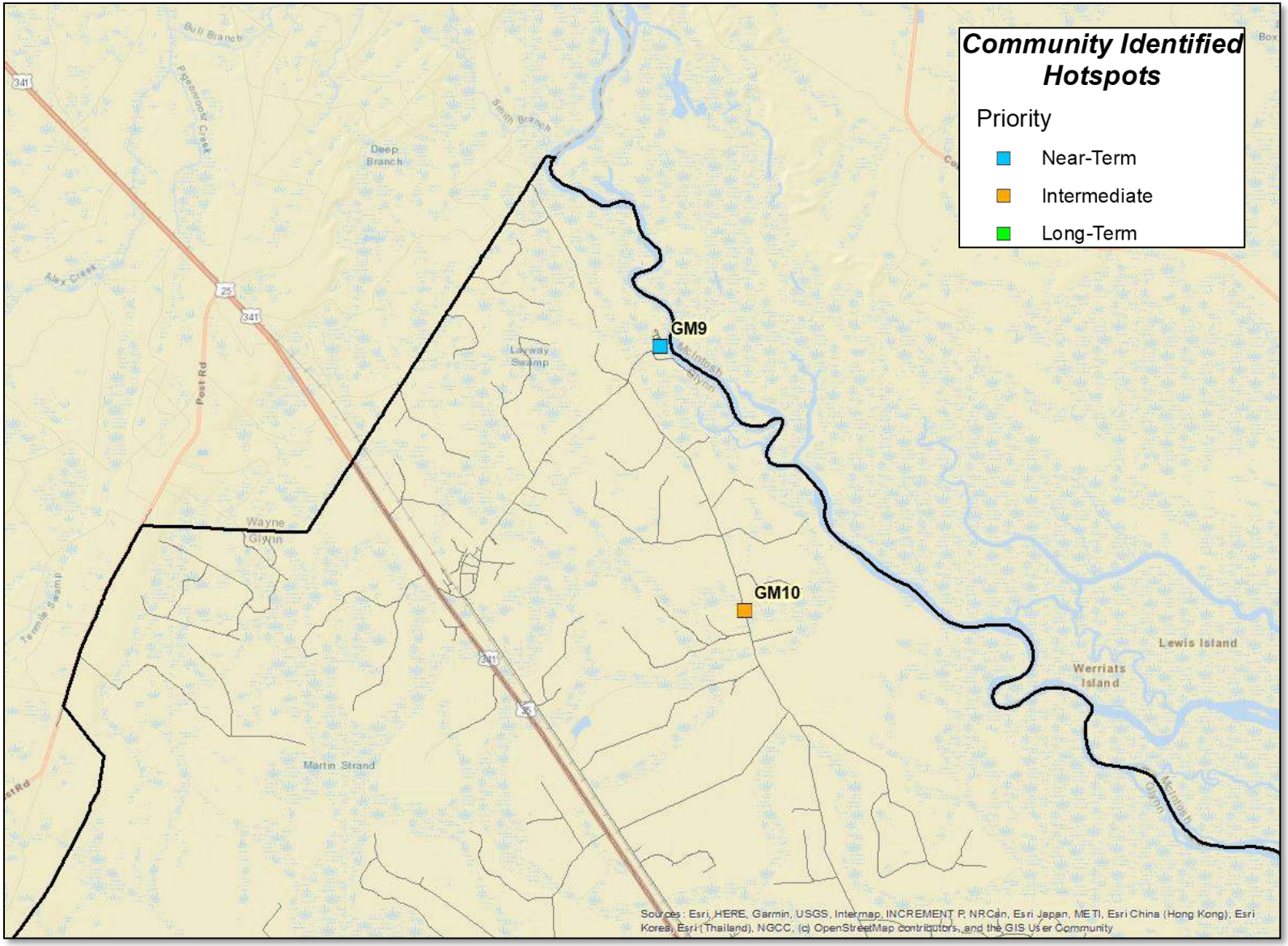


Figure 4.4: Map of Project Locations in northern Glynn Mainland (GM).

Table 4.4: Glynn County (St. Simons Island) Project List – Shoreline Assessment and Implementation Resiliency Plan.

Site ID	Site Description	Priority *(Based on Rank)*	Cost	Potential Partners / Project Lead	Proposed Solution	Alternates
GI6	Myrtle & Postell Beach Access	Near-Term	$$$	GEMA/FEMA, HUD, Army Corps	Planned Rock Revetment	Constructed Dune w/ drive-over subsurface barrier; Nearshore Placement
GI18N	General: Beach Access	Near-Term	$$$	GEMA/FEMA, HUD, Army Corps	Constructed Dune w/ drive-over subsurface barrier	Temporary Barrier; Nearshore Placement
GI8	5th St & Beachview Access	Near-Term	$$$	GEMA/FEMA, HUD, Army Corps	Planned Rock Revetment	Constructed Dune w/ drive-over subsurface barrier; Nearshore Placement
GI16	SSI Gateway Flooding	Near-Term	$$$	GEMA/FEMA, HUD, Army Corps	Elevate Intersection	Relocate Road
GI23	Fort Frederica	Near-Term	$$	GEMA/FEMA, HUD, Army Corps, NPS	Living Shoreline	Stream Restoration; Rip Rap
GI2	King & Prince Erosion	Near-Term	$$$$	GEMA/FEMA, HUD, Army Corps	Repair Rock Revetment and/or Sea Wall	Nearshore Placement
GI4	15th St & Ocean	Near-Term	$$	GEMA/FEMA, Army Corps	Green Infrastructure; Tide Gate	Elevate Roadway
GI5	3rd St & Ocean	Near-Term	$$	GEMA/FEMA, Army Corps	Green Infrastructure; Tide Gate	Elevate Roadway
GI22	Neptune Park	Near-Term	$$$$	GEMA/FEMA, HUD, Army Corps	Planned Rock Revetment	Sea Wall; Nearshore Placement
GI1	Torras Causeway Flooding (Current low points)	Intermediate	$$$	GDOT, Army Corps, GEMA/FEMA	Raise Causeway (where needed)	N/A
GI3	Gould's Inlet	Intermediate	$$$	GEMA/FEMA, HUD, Army Corps	Planned Rock Revetment	Constructed Dune w/ drive-over subsurface barrier
GI14	Ocean Blvd Headwall Erosion	Intermediate	$	County	Living Shoreline	Expand headwall

Site ID	Site Description	Priority *(Based on Rank)*	Cost	Potential Partners / Project Lead	Proposed Solution	Alternates
GI24	Sea Island Causeway	Intermediate	$$$$	GEMA/FEMA, Army Corps, Sea Island Corp.	Raise Causeway	N/A
GI7	East Beach	Intermediate	$$$	GEMA/FEMA, HUD, Army Corps	Constructed Dune	Sand / Dune Fencing
GI20N	General: SSI Marshfront Homes Flooding	Intermediate	$$$$	GEMA/FEMA, HUD, Army Corps	Living Shoreline	Elevate houses above BFE or Buy-outs
GI17	Barnes Plantation Pump	Intermediate	$$	GEMA/FEMA, HUD, Army Corps	Replace Tide Gate	Elevate houses above BFE or Buy-outs
GI15N	General Flooding: South & East of Ocean Blvd	Intermediate	$$$$	GEMA/FEMA, HUD, Army Corps	Tide Control; Regional SW Mgmt / Green Infrastructure	Elevate houses above BFE or Buy-outs
GI11	Massengale Park	Intermediate	$$	GEMA/FEMA, HUD, Army Corps	Constructed Dune w/ drive-over subsurface barrier	Temporary Barrier
GI12	Ocean Blvd Erosion near Tide Gate	Long-Term	Spring 2020 Update: New headwall and tide flap were installed (*erosion addressed*)			
GI13	Ocean Blvd Sidewalk Erosion	Long-Term	$	County	Living Shoreline	Rip Rap
GI19	Alabama-Forest Park Flooding	Long-Term	$$$	GEMA/FEMA, HUD, Army Corps	Elevate houses above BFE or Buy-outs	Green Infrastructure / Regional SW Mgmt
GI25	Dunbar Creek WWTP	Long-Term	$$$$	BGJWSC, HUD, GEFA, GEMA/FEMA	Sea wall / bulk head	Relocate structure
GI9N	General Stormwater: Glynn Haven	Long-Term	$$$$	County	Stormwater Masterplan/ H&H Modeling; Tide Gates	Green Infrastructure / Regional SW Mgmt
GI21N	General Stormwater: Sea Palms	Long-Term	$$$	County	Stormwater System Maintenance (grading ditches)	Green Infrastructure / Regional SW Mgmt
GI10N	General Stormwater: Harrington Rd	Long-Term	$$$$	County	Purchase Easements/Legal Investigation; Stormwater System Maintenance	Tide Control; Regional SW Mgmt / Green Infrastructure

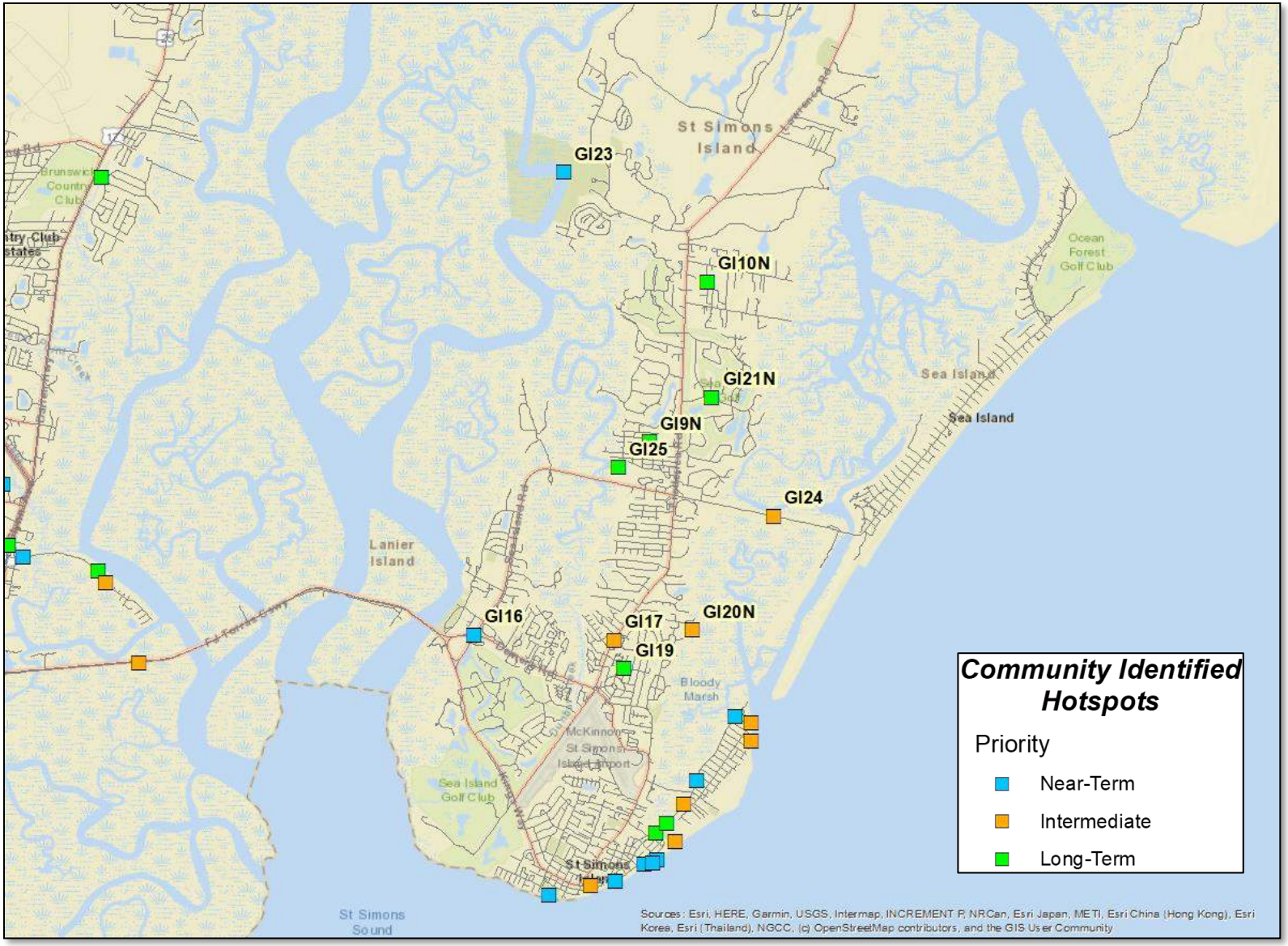


Figure 4.5: Map of Project Locations in Central and Northern Sections of St. Simons Island (GI).

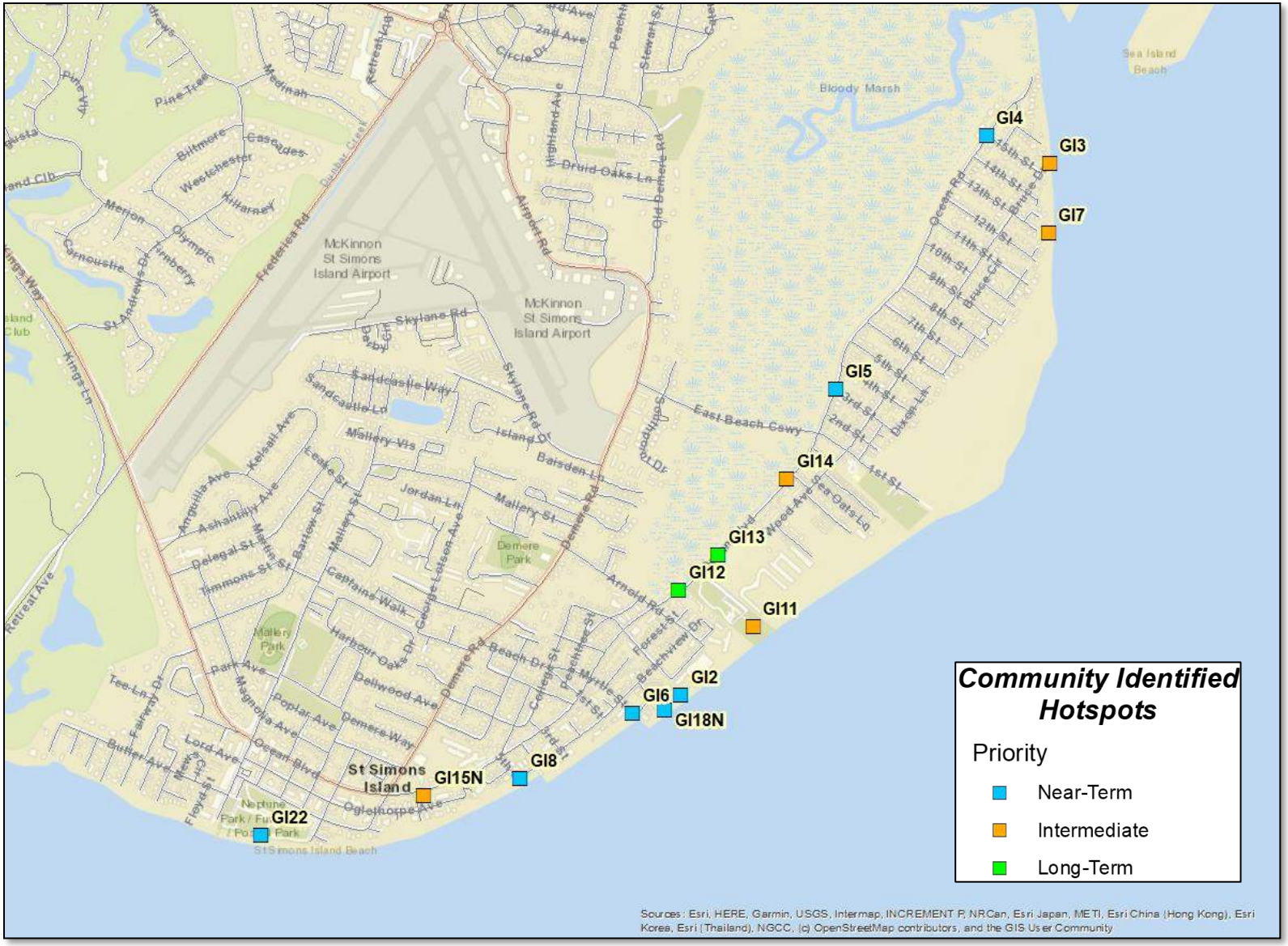


Figure 4.6: Map of Project Locations in Southern Section of St. Simons Island (GI).

Table 4.5: Jekyll Island Project List – Shoreline Assessment and Implementation Resiliency Plan.

Site ID	Site Description	Priority *(Based on Rank)*	Cost	Potential Partners / Project Lead	Proposed Solution	Alternates
J7-J9	North Loop Trail (Pier to Driftwood Access)	Near-Term	$$$$	GEMA/FEMA, Army Corps	Elevate trail; full-span bridge	Constructed Dune; relocate recreation facilities; abandon a maintained bike path
J4	Cemetery near Horton House	Near-Term	$$	JIA, CRD/EPD	Living shoreline & Green Stormwater Infrastructure	Other Stream Restoration; Rip Rap
J9-J11	North End Shoreline Restoration (Sand Motor)	Near-Term	$$$$	GEMA/FEMA, Army Corps	Nearshore Placement ("Sand Motor")	Constructed Dune
J3	Brewery Site	Near-Term	$$$	JIA, CRD/EPD	1st Priority - Preserve Historical Structure in Place	Living Shoreline; other stream restoration; sheet piles
J5-J6	Road to Fishing Pier & Parking Lot	Near-Term	$$$	GEMA/FEMA, Army Corps	Elevate roadway / parking lot	Relocate recreation facilities / parking lot
J17	Roadway to Sole Public Boatramp	Intermediate	$	JIA	H&H analysis and remove pipe if able	Install headwall at pipe
J25	Stable Road & Riverview Drive Outfall	Intermediate	$$	GEMA/FEMA, JIA, CRD/EPD	Rip Rap	Living shoreline & Green Stormwater Infrastructure
J20	Jekyll Island Electrical Substation	Intermediate	$$$$	GA Power, GEMA/FEMA, Army Corps	Elevate structure	Sea wall / bulk head
J21	JIA WWTP	Intermediate	$$$$	GEMA/FEMA, HUD, GEFA, Army Corps	Flood wall	Relocate structure
J1	Edge of Sea Wall Erosion	Intermediate	$	JIA, CRD/EPD	Living shoreline	Rip Rap
J16	St Andrews Beach	Long-Term	$$$	JIA, GEMA/FEMA, Army Corps	Current: Sand / Dune Fencing ($)	Future: Constructed Dune ($$$)
J22	Drainageway North of Golf Course	Long-Term	$$$	Army Corps, GEMA/FEMA	Stream restoration / wetland restoration	Rip Rap

Site ID	Site Description	Priority *(Based on Rank)*	Cost	Potential Partners / Project Lead	Proposed Solution	Alternates
J12	Cpt Wylly Rd & Beachview	Long-Term	$$$	JIA, GEMA/FEMA, Army Corps	Current: Sand / Dune Fencing ($)	Future: Constructed Dune ($$$)
J13	Vehicle Beach Access near Conference Center	Long-Term	$	GEMA/FEMA, Army Corps	Constructed Dune w/ drive-over subsurface barrier	Temporary Barrier

[1] Combines multiple projects, to be designed as one, but phased as funding is available, score is based on more severe sections

[2] Highest impact from matrix is effect on recreation (will have secondary items addressed in J11 Beach Access to Driftwood - vulnerability) and extra protection for recent revetment

[3] 2,000 feet from Holiday Inn to Oceanview; need for dune rebuilding as secondary backstop and to control flow down Captain Wylly Rd

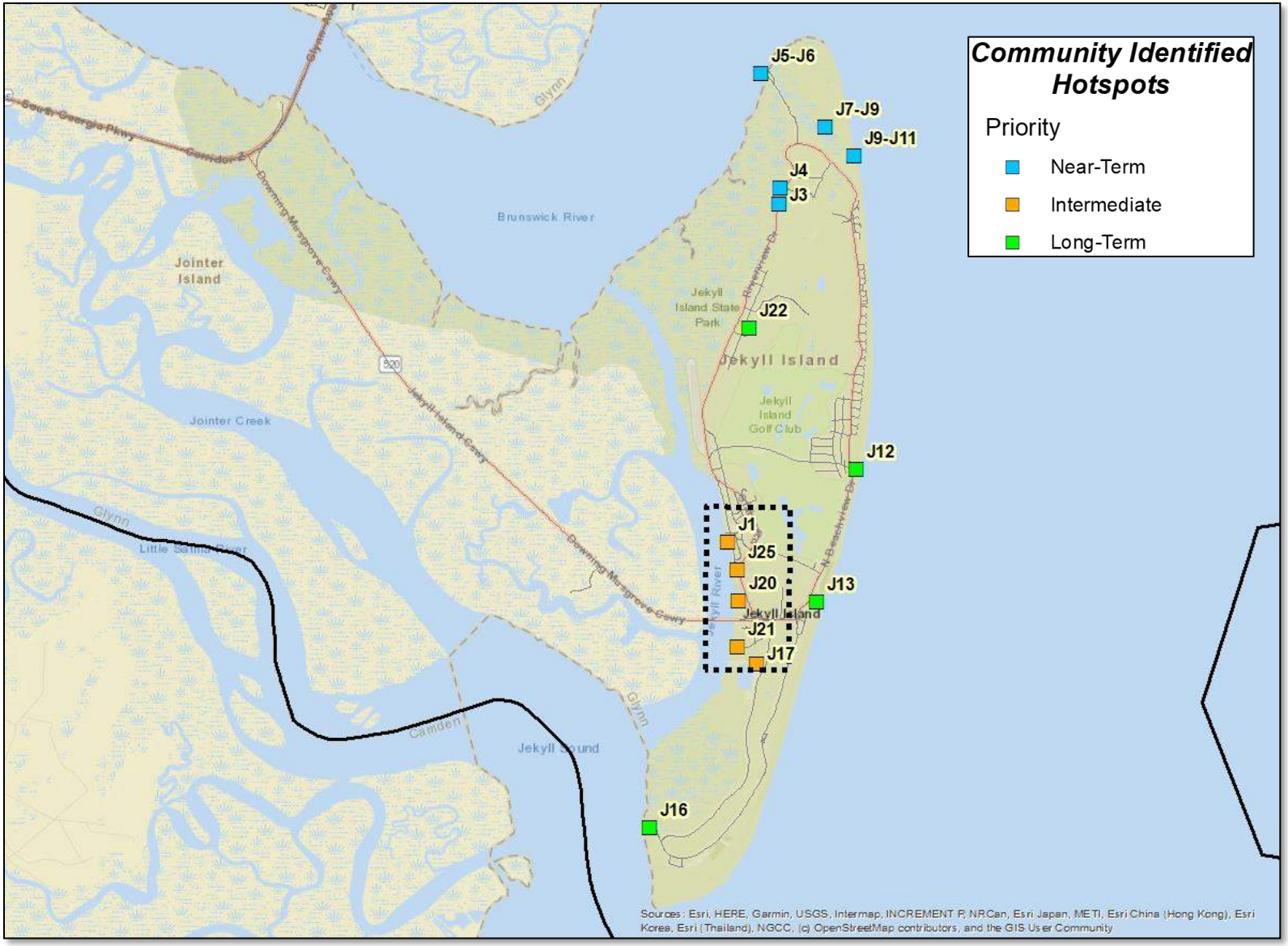


Figure 4.7: Map of Project Locations on Jekyll Island (J).

5. Beach Management

A secondary goal of this project was to incorporate components of a Beach Management Plan in order to be eligible for grants and programs from FEMA or Army Corps for mitigation efforts on the public beaches in Glynn County. Of the three jurisdictions in this plan and project, only Glynn County and Jekyll Island have ocean-facing beaches, so the focus of this next section will be St. Simons Island and Jekyll Island. However, some background information is included for the other two barrier islands in Glynn County that are privately-owned – Sea Island and Little St. Simons Island.

Georgia has defined "beach" in the Shore Protection Act (O.C.G.A. 12-5-230, et seq.) as "a zone of unconsolidated material that extends landward from the ordinary low-water mark to the line of permanent vegetation." Management consideration of public beaches and other public areas within the purview of the Georgia Coastal Management Program provides a planning framework for shorefront access and protection. This section will describe a planning process for the protection of, and access to, public beaches and other public coastal areas of environmental, recreational, historical, aesthetic, ecological or cultural value.

5.1. Background/History

Shorelines naturally move and shift due to the constant energy forces from water and wind, as well as the deposit of materials along the land/water interface. These accretion and erosion cycles can be affected by both natural events and human activities. In turn, the cycles affect structures, property values, flood hazards, nesting areas, and other social and ecological factors.

The total length of coastal Georgia's shoreline has been estimated at 2,344 miles, which ranks 11th of the 36 coastal states and territories. Georgia's ocean-front beaches constitute approximately 88 linear miles of the total shoreline. Georgia's beaches are located on the seaward side of barrier islands, of which only four are readily accessible by automobile (Tybee Island, St. Simons Island, Sea Island, and Jekyll Island). These four barrier islands contain about 19 miles of ocean beaches. Due to their automobile accessibility, these four barrier islands are also Georgia's only islands where development has substantially impacted the beach's natural sand-sharing system and dynamic sand dune fields. Coastal Georgia's less accessible barrier islands have retained their dynamic sand dune fields and natural cycle of beach erosion and accretion.

The majority of coastal Georgia's 2,344 miles of shoreline is contained within the hundreds of saltwater rivers and creeks that intertwine the 378,000 acres of salt marsh lying between the barrier islands and the mainland. Georgia's coastal marshes comprise approximately one-third of the remaining salt marshes on the Atlantic Coast. All major elements of the island-marsh-tidal system are interrelated: sand beaches and dunes protect the islands from erosion and flooding; the islands protect the marshes from the force of storms; and the marshes provide feeding and nursery grounds for aquatic life.

St. Simons Island has the largest human population of Georgia's barrier islands, with 16,365 permanent residents in 2018 (U.S. Census ACS, 2018). Jekyll Island is State-owned and is operated

by the Jekyll Island Authority, and it has a resident population of 568 (U.S. Census ACS, 2018). Both islands experience much larger daytime populations during festivals, large events/holidays, and in the summertime. Both islands are accessible from the mainland via a causeway, or by air or boat. More details on public beach access points and other facilities are described in Section 5.3.

Little St. Simons Island is only accessible by boat, and tours and lodging are available by reservation. Sea Island is accessible by automobile via a causeway from St. Simons Island and by boat. Sea Island has no land-side access to public beaches, except the areas associated with the Cloister Hotel, which is available to hotel guests only. Sea Island has no public parking areas and no access to beaches from the public thoroughfares.

5.1.1. Historical Beach Management

Shoreline erosion of beaches in coastal Georgia is of paramount concern on only about 19 miles out of the total 88 miles of beach due to most of the islands being uninhabited or very sparsely populated. Jekyll Island has approximately eight miles of beach that has never undergone engineered sand nourishment. St. Simons Island has approximately 3.8 miles of beaches that are maintained by the Glynn County government, and they have never undergone engineered sand nourishment. Shore stabilization structures (e.g., rock revetments) are prevalent on St. Simons Island's and Jekyll Island's beaches near development. In the 1960s, "Johnson Rocks" were installed following Hurricane Dora in 1964, when most of the primary dunes were lost in the storm. Revetment construction on Jekyll Island continued into the mid-1970s.

Sea Island is operated by the Sea Island Company as a residential resort community, and it has about 4.7 miles of beach which underwent privately-funded re-nourishment projects in 1986, 1990, and 1997. The re-nourishment volume for these projects was approximately 192,000, 2.0 million, and 350,000 cubic yards (CY), respectively. Sea Island Company completed a permit that was approved in 2018 to re-nourish up to 2.5 million CY in 2018-2019. The project was met with opposition and a legal battle, but re-nourishment took place in Summer 2020.

5.2. Beach Profile Inventory

A beach profile describes a cross-section of the topography and bathymetry (the measurement of depth of water in oceans, seas, or lakes) of the land surface along the dry beach and nearshore/sand bar regions. By surveying the same line routinely, scientists can measure the change in sand volume or shoreline position. Beach profiles have been measured on St. Simons Island and Jekyll Island since 2008 and 2014, respectively. The profiles were measured roughly two times per year. St. Simons Island beaches have been surveyed 20 times from October 2008 to June 2019, and Jekyll Island beaches have been surveyed 10 times from 2014 to 2019. Overall, there are 16 sites on St. Simons Island (Figure 5.1) and 32 sites on Jekyll Island (Figure 5.2).

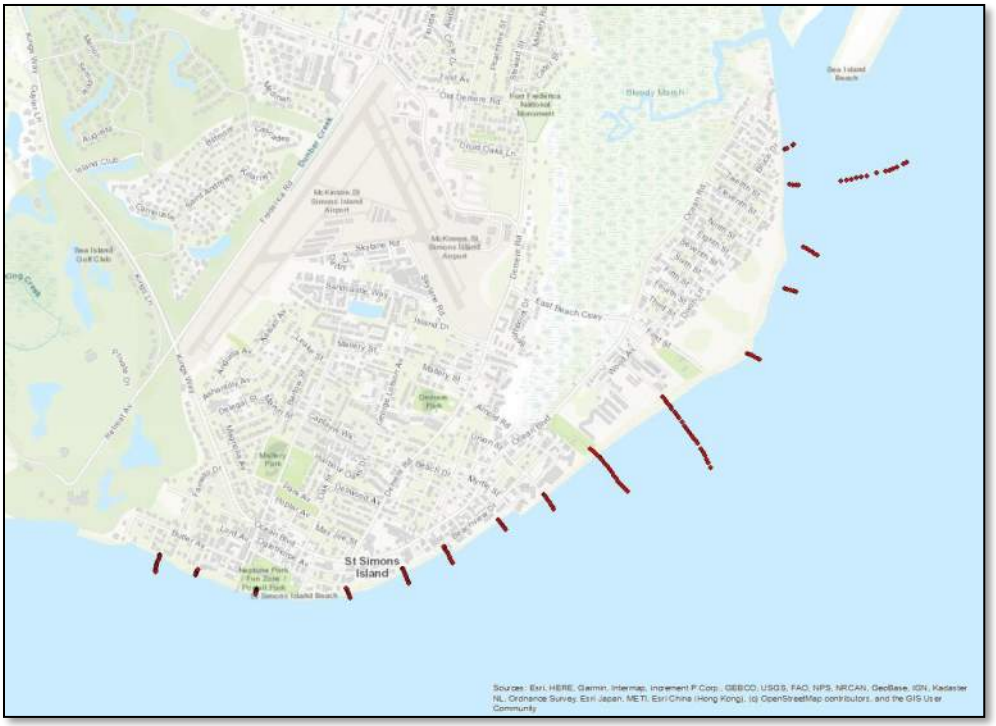


Figure 5.1: Beach Profile Locations on St. Simons Island.

Figure 5.2: Beach Profile Locations on Jekyll Island.

These surveys have a lot of good information on the change in shoreline position over the years, especially from recent hurricanes in 2016 and 2017; however, they do not have the same exact starting location and bearing, making analysis very tedious and time-consuming. As a result, two representative profiles were calculated for an area near Projects GI-6 (Myrtle Street Beach Access) in Figure 5.3 and GI-8 (5th Street Beach Access) in Figure 5.4. The Myrtle Street Beach Access profile is about 350 feet southwest of the Johnson Rocks, rock revetment, where the 5th Street Beach Access profile is approximately 50 to 70 feet southwest of the Johnson Rocks.

Figure 5.3: Map of St. Simons Island Beach Profile near Myrtle Street Beach Access (Project GI-6).

Figure 5.4: Map of St. Simons Island Beach Profile near 5th Street Beach Access (Project GI-8).

The profile data from 20 survey dates were reviewed in ArcGIS, and locations where survey points overlapped across dates were established as "shot" locations to compare progression with time. If a survey date did not have a survey point at that shot, the elevation was interpolated from available points. If date-to-date had little change in the beach profile, they were averaged together to present graphically and minimize the number of lines/profiles. The beach profile results from 2008 to 2019 are presented in Figure 5.5 for Myrtle Street Beach Access and Figure 5.6 for 5th Street Beach Access. Profiles conducted immediately before or after Hurricane Matthew and Irma are noted as separate lines/profiles since these were significant storms. While there was considerable sand movement from these events, a Nor'easter system in 2014 to 2015, ahead of Hurricane Matthew added a large volume of sand to extend the beach at these locations. Overall, there was very little movement of the beach profile from 2008 to 2014, and substantial accretion in 2014 and 2015. At Myrtle Street Beach Access and an elevation 0', the beach grew approximately 200 feet from 2013 to 2017 (post-Irma), but it has since receded approximately 100 feet by June 2019, for a net gain of 100 feet. At 5th Street Beach Access and an elevation 0', the beach grew approximately 200 feet from 2014 to 2017 (post-Irma), and it has maintained the profile at this distance through June 2019. A higher ridge, 100-feet from the origin (Shot #1), has grown from an elevation of 3 feet to 5.5 feet. In comparing these beach profiles showing accretion in the last decade to the Shoreline Change Rate from the Georgia Coastal Hazards Portal, the results are contradictory. This is due to the period when the data was collected – 1930s to 2000 and 2008 to 2019. The Shoreline Change Rate data, from the 1930s to 2000, showed –0.60 to –0.80 m/year (–2.0 to –2.6 feet/year) erosion at Myrtle Street and 0.00 to –0.20 m/year (0.0 to –0.7 feet/year) erosion at 5th Street.

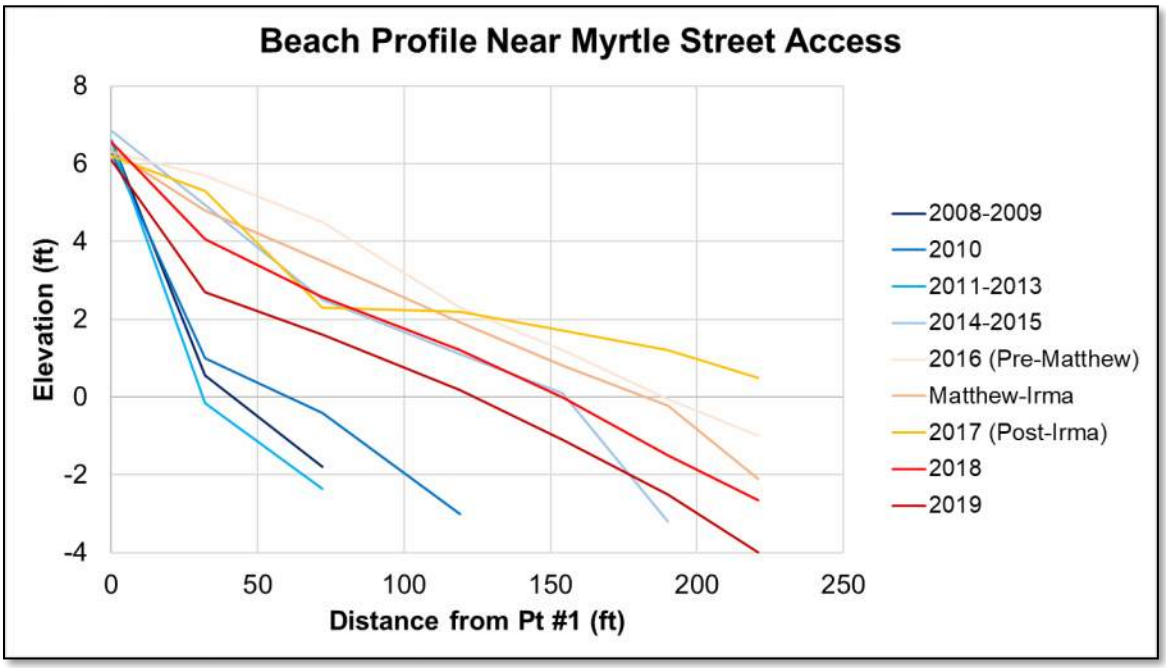


Figure 5.5: Beach Profile Progression near Myrtle Street Beach Access (Project GI-6).

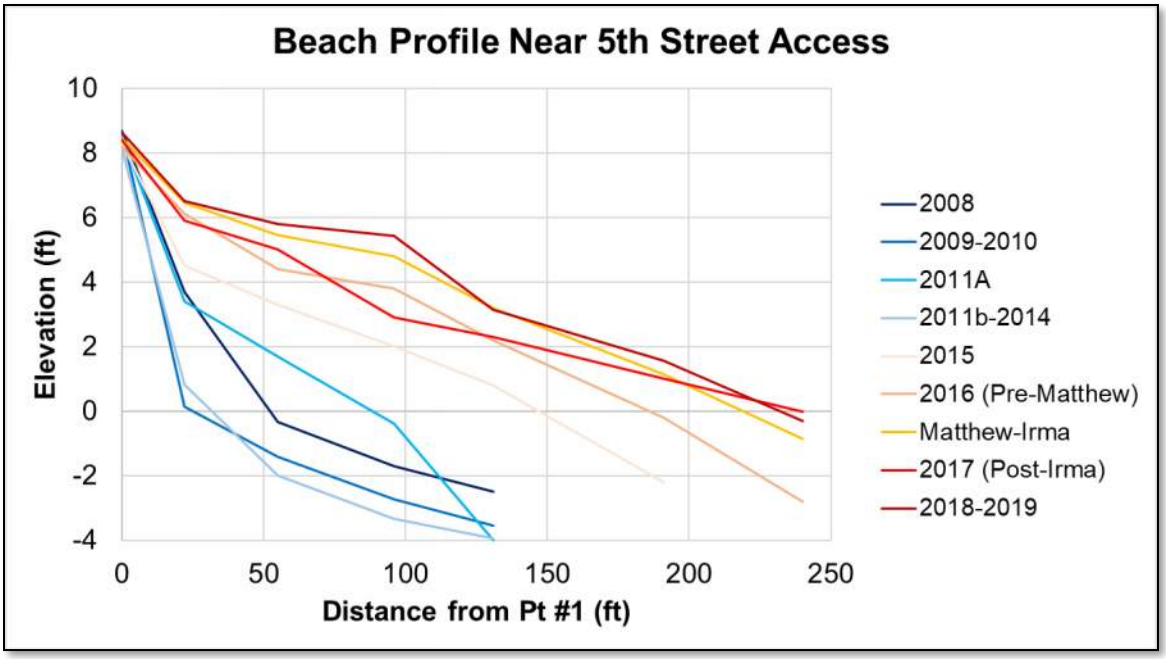


Figure 5.6: Beach Profile Progression near 5th Street Beach Access (Project GI-8).

The beach profile dataset is very useful and informative. However, as this dataset continues to grow, it is recommended to modify the approach to simplify analysis and data management. The City of Folly Beach created permanent beach profile monuments to serve as survey benchmarks. These benchmarks are permanent metal disks in the ground with information stamped on the face that marks a specific point that can consistently be reoccupied. For Glynn County, it is recommended to establish a benchmark for the origin of each profile and give each profile and measurement a unique ID#, so that the point can be reoccupied each time. It is also recommended to set a bearing for each profile to consistently survey the same location.

5.3. Public Beach Access

5.3.1. St. Simons Island

The County maintains beach access and facilities at Massengale Park and the Coast Guard Station at East Beach. Additionally, the County maintains 41 beach access locations throughout St. Simons Island, as depicted in Figure 5.7. Beach access points at Massengale Park (#24), Driftwood Drive (#25), and Coast Guard Station (#27) have ADA accessible mats. Massengale Park also has restroom facilities, picnic tables, grills, and a playground. Coast Guard Station also has restroom facilities and a seasonal concession facility.

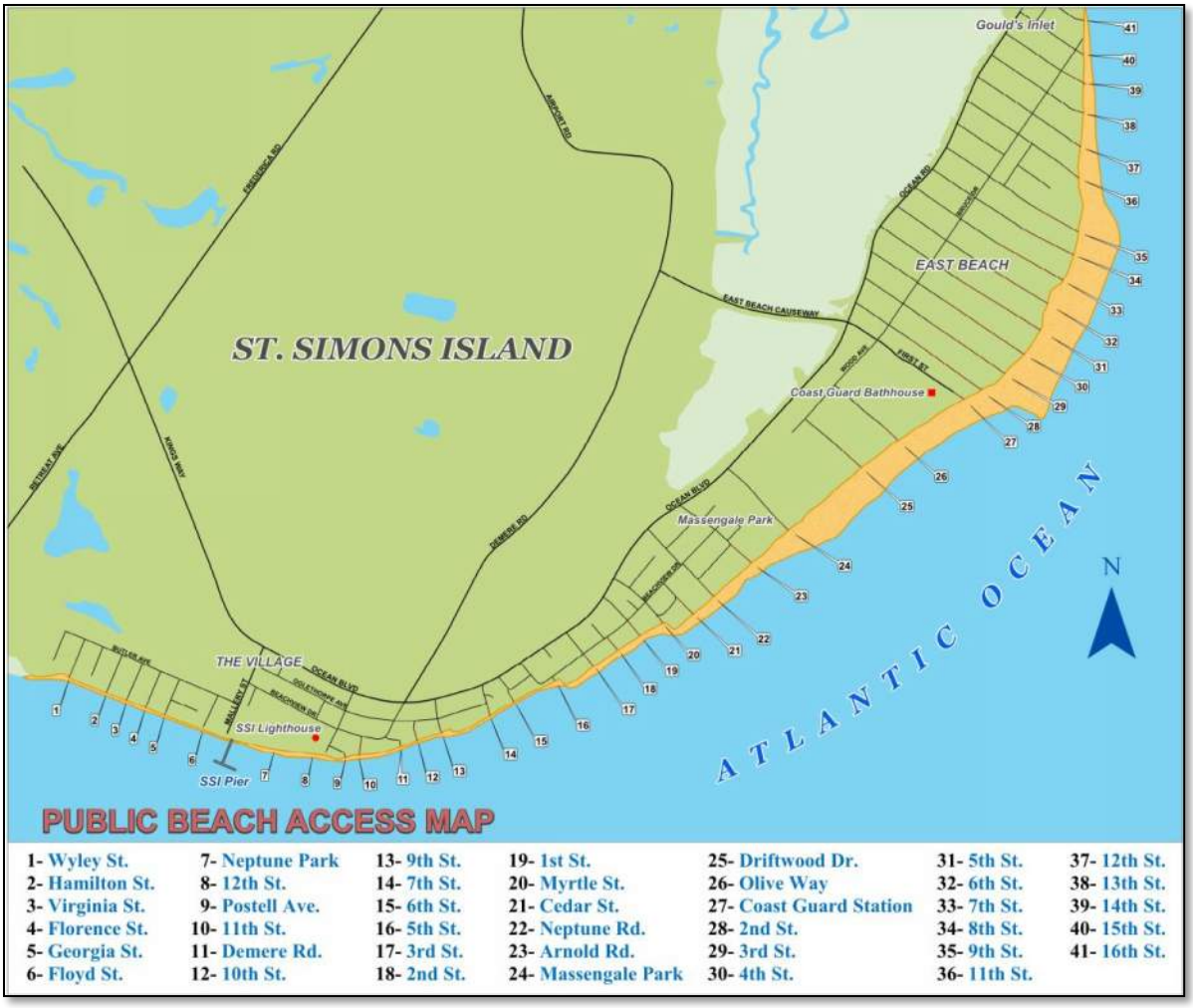


Figure 5.7: St. Simons Island Public Beach Access Map.

An additional topic on public beach use on St. Simons Island are lifeguards and safety. Lifeguards are stationed at and between Coast Guard Beach and Massengale Beach from Memorial Day through Labor Day from 11:00 am to 6:00 pm, except during inclement weather. Glynn County also operates a beach warning flag system on St. Simons Island, where:

- Double Red - Water closed to public use
- Red – High Hazard (rough conditions such as strong surf and/or currents)
- Yellow – Medium Hazard (light surf or currents)
- Green – Low Hazard (calm conditions)
- Purple – Marine Pest (jellyfish, stingrays, and dangerous fish)

5.3.2. Jekyll Island

There are 21 public beach access points on Jekyll Island (Figure 5.8). Three public beach access points are currently accessible to people with disabilities, and they are listed below.

- Oceanview Beach Park, crossover #26
- Great Dunes Park, crossover #32
- St. Andrews Beach, crossover #67

The Oceanview Beach Park features a wheelchair-accessible observation deck with two ADA-accessible benches. The ramp at St. Andrews Beach provides access directly to the hard-pack sand on the shore. Due to large tidal differentials and shifting dunes, the mats at crossover #32 may not always reach the hard-pack sand.

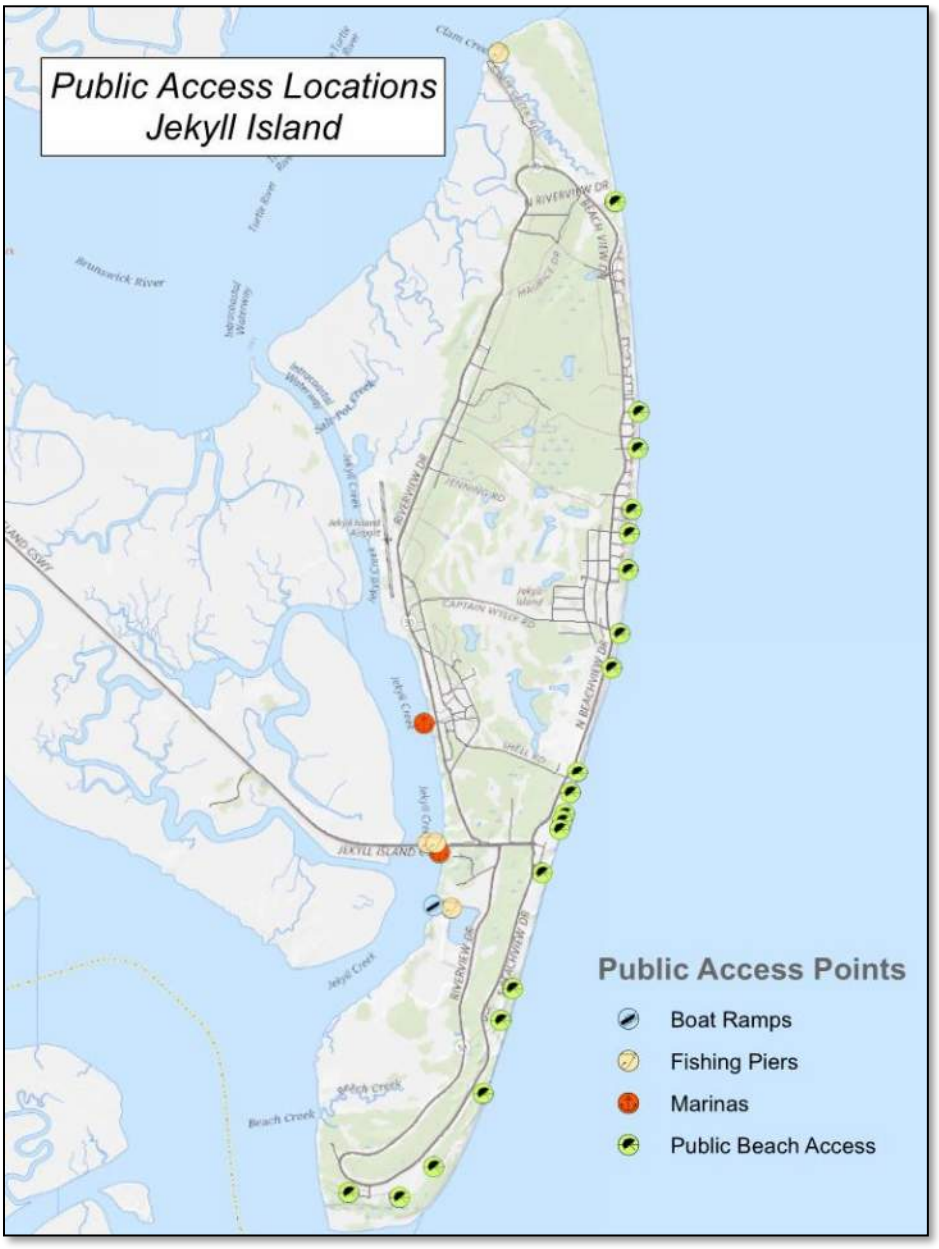


Figure 5.8: Public Access Points on Jekyll Island.

Per the Jekyll Island Carrying Capacity & Infrastructure Assessment, there are 860 parking spaces available at the beach-only locations (August 2017 data). There are additional parking spaces available with beach access in the following land uses: village, residential, hotel, historical, and facility. Excluding parking associated with residences, the total count of parking stalls on Jekyll Island in August 2017 was 5,769. From North to South, locations with large parking areas and public beach access include: Jekyll Island Fishing Pier, Driftwood Beach Parking (on Beach View Drive), Oceanview Beach Park, The Beach Pavilion, Great Dunes Park, The Village, Ocean Club, 4-H Center / Soccer Complex, and St. Andrews Picnic Area.

5.3.3. Countywide Boat Ramps and Water Access

The County, City, DNR, and other private entities have facilities to provide water access at 33 locations across the County. This list, in Table 5.1, includes boat ramps, marinas, fishing piers, and fishing bridges.

Table 5.1: Water Access in Glynn County.

Name	Location	River Access	Usage
Lanier Boat Ramp	Brunswick	Brunswick River	Boat Ramp
Altamaha Regional Park	Glynn County	Altamaha River	Boat Ramp
Turtle River Boat Ramp (GA Hwy 303)	Glynn County	Turtle River	Boat Ramp
Upper Turtle River (GA Hwy 99) Boat Ramp	Glynn County	Turtle River	Boat Ramp
Blythe Island Regional Park	Glynn County	South Brunswick River	Boat Ramp
South Brunswick River Boat Ramp	Glynn County	South Brunswick River	Boat Ramp
Blythe Island Beach Drive Park	Glynn County	Turtle River	Boat Ramp
Village Creek (Harrington) Boat Ramp	St. Simons Island	Village Creek	Boat Ramp
MacKay River Boat Ramp	St. Simons Island	MacKay River	Boat Ramp
Jekyll Creek Boat Ramp	Jekyll Island	Jekyll Creek	Boat Ramp
Lanier Bridge Fishing Pier	Brunswick	Brunswick River	Fishing Pier
Overlook Park Fishing Pier	Brunswick	Terry Creek	Fishing Pier
Altamaha Regional Park Pier	Glynn County	Altamaha River	Fishing Pier
Blythe Island Regional Park Fishing Pier	Glynn County	South Brunswick River	Fishing Pier
Little River Bridge Fishing Catwalk	St. Simons Island	Little River	Fishing Bridge
Mackay River Fishing Pier	St. Simons Island	Mackay River	Fishing Pier
Gascoigne Bluff Fishing Pier	St. Simons Island	Frederica River	Fishing Pier
Gould's Inlet Fishing Pier	St. Simons Island	Goulds Inlet	Fishing Pier
St. Simons Island Fishing Pier	St. Simons Island	St. Simons Island Sound	Fishing Pier
Back River Fishing Piers	St. Simons Island	Back River	Fishing Pier
Clam Creek Fishing Bridge	Jekyll Island	Jekyll Creek	Fishing Bridge

Name	Location	River Access	Usage
Jekyll Pier	Jekyll Island	St. Simons Island Sound	Fishing Pier
Jekyll Creek Bridge Fishing Piers	Jekyll Island	Jekyll Creek	Fishing Pier
Tidelands Pond	Jekyll Island	Tidelands Pond	Fishing Pier
Brunswick Landing Marina	Brunswick	East River	Marina
Hidden Harbor Yacht Club	Glynn County	Troupe Creek	Marina
Blythe Island Regional Park	Glynn County	South Brunswick River	Marina
Two-Way Fish Camp	Glynn County	South Altamaha River	Marina
St. Simons Island Marina (St. Simons Boating and Fishing Club)	St. Simons Island	Frederica River	Marina
Morningstar Marina – Golden Isles	St. Simons Island	Frederica River	Marina
Hampton River Marina	St. Simons Island	Hampton River	Marina
Jekyll Harbor Marina	Jekyll Island	Jekyll Creek	Marina
Jekyll Wharf Marina	Jekyll Island	Jekyll Creek	Marina

Data Source: Georgia Coastal and Marine Planner (G-CAMP) – "Coastal Water Access Points"

5.4. Policies and Laws

There are a number of state and local policies that regulate activities near shorelines and on beaches. These are presented for Georgia in Section 5.4.1, Glynn County in 5.4.2, and Jekyll Island in Section 5.4.3.

5.4.1. State

The primary State management authority for shoreline stabilization and beach erosion control is embodied in the Shore Protection Act of 1979 (O.C.G.A. 12-5-230, et seq.). The Shore Protection Act is the primary legal authority for protection and management of Georgia's shoreline features including sand dunes, beaches, sand bars and shoals. Its jurisdiction includes the submerged shoreline lands out to the three-mile limit of State ownership, the sand beaches to ordinary high-water mark, and the dynamic dune field.

GADNR-CRD, through the Shore Protection Committee, issues permits for any shoreline engineering activity or land alteration on beaches, sand dunes, bars, or submerged shoreline lands. The Shore Protection Act contains provisions for two distinct alternatives in addressing shoreline erosion. The first alternative, erosion control activities, includes beach restoration and re-nourishment, artificial dune construction, and construction and maintenance of groins and jetties. The second alternative, shoreline stabilization, includes construction of revetments.

In addition to shoreline erosion, natural processes such as storms and hurricanes can result in hazards to people and property through resulting wind, waves, and rising and falling water. There are two approaches to reducing damage from storms and hurricanes: engineering solutions and land-use planning. Engineering solutions may be directed at the environment (e.g., jetties, sea walls)

or at structures (e.g., stilts, break-away walls). Many engineering modifications of the environment, however, can result in problems elsewhere on the coastline. Thus, the Shore Protection Act limits structures on Georgia's beaches. Land-use planning recognizes that certain areas (e.g., inlets, beaches) are more hazardous than others (e.g., areas protected by dunes and vegetation). Through policies such as the Shore Protection Act, which recognizes that coastal sand dunes, beaches, sandbars, and shoals help protect "real and personal property and natural resources," and the Marsh Protection Act, which recognizes that marshes "provide a great buffer against flooding and erosion," Georgia addresses coastal hazards. While land-use planning is the responsibility of local governments, through the Georgia Coastal Management Program, GADNR-CRD can assist with hazard mitigation planning by providing technical assistance and pass-through funding for planning efforts.

The Coastal Marshlands Protection Act (O.C.G.A. 12-5-280, et seq.) provides GADNR-CRD with the authority to protect tidal wetlands. The CMPA manages certain activities and structures in marsh areas and requires permits for other activities and structures. Erecting structures, dredging, or filling marsh area requires a Marshlands Protection Committee Permit administered through GADNR-CRD. In cases where the proposed activity involves construction on a State-owned tidal water bottom, a Revocable License issued by the CRD may also be required. The estuarine area is defined as all tidally influenced waters, marshes, and marshlands lying within a tide elevation range from 5.6 feet above mean tide level and below. The jurisdiction of the Coastal Marshlands Protection Act includes marshlands, intertidal areas, mudflats, tidal water bottoms, and salt marsh areas within estuarine areas of the state.

The Georgia Coastal Management Program joined the Federal Coastal Zone Management Program (CMP) in 1998. Georgia's federally-approved CMP allows the state to:

- Provide technical assistance and Coastal Incentive Grants to local governments for projects in coastal area communities
- Provide public education about coastal resources
- Simplify the permitting process and improve compliance with issued permits
- Exercise more control over federal projects in the coastal area through federal consistency review
- Improve environmental monitoring efforts to ensure the health of our coastal ecosystems

Developed through an extensive public process; the Georgia Coastal Management Program is an integrated, networked program which uses existing state laws to manage Georgia's critical coastal resources. State resource policies, such as the Coastal Marshlands Protection Act and the Shore Protection Act, protect critical natural areas but do not provide a coordinated, comprehensive management framework with which to address the above issues. The Georgia Coastal Management Program provides such a framework.

The people of the State of Georgia are dependent upon the rivers, streams, lakes, and subsurface waters of the state for public and private water supply and for agricultural, industrial, and recreational uses. Through the Georgia Water Quality Control Act (O.C.G.A. 12-5-20, et seq.), the water resources of the state shall be utilized prudently for the maximum benefit of the people, in

order to restore and maintain a reasonable degree of purity in the waters of the state and an adequate supply of such waters, and to require where necessary reasonable usage of the waters of the state and reasonable treatment of sewage, industrial wastes, and other wastes prior to their discharge into such waters.

5.4.2. Glynn County

In reviewing the Glynn County Code of Ordinances, the following ordinances pertain to beach-related activities.

- Chapter 2-11 Parks and Recreation, Article I, Park Use Ordinance
- Chapter 2-11 Parks and Recreation, Article III, Beach Control
    - 2-11-14: Jurisdiction of Ordinance
    - 2-11-15: Permit Required (to sell any products or to light a fire)
    - 2-11-16: Driving or Parking on Beaches (unlawful to drive on beaches or dune area without a permit; unlawful to park or store boats/sailboats/motorized vehicles or any equipment overnight on beach or in dune area)
    - 2-11-16.1: Obstructions and Unattended Personal Property on Beaches (unlawful to leave personal property on beach between 9 p.m. and 7 a.m.
    - 2-11-17: Prohibition as to certain Type of Containers: (no glass)
    - 2-11-18: Receptacles to be Provided (Department responsible to establish and maintain receptacles for litter)
    - 2-11-19: Police Patrols (power for County Police Department to enforce ordinance)
    - 2-11-20: Use of Beaches for Commercial Purposes (unlawful without a permit)
    - 2-11-21: boating safety zones (within 1,000 feet from the high-water mark)
- Chapter 2-11 Parks and Recreation, Article IV, Boat Safety
- Chapter 2-27 Water Resources Protection Ordinance
    - Stormwater Management Ordinance
- Chapter 2-5 Building and Construction, Article VII Soil Erosion and Sedimentation Control
    - Soil Erosion, Sedimentation, and Pollution Control Ordinance (covers buffers, coastal marshland and ESPCPs)
    - 2-5-100 to 2-5-110
- Chapter 2-5 Building and Construction, Article VIII Flood Damage Control
    - 2-5-120 to 2-5-146
- Chapter 2-23 Natural Resources, Article 1, Habitat Protection
    - Beachfront lighting specifications to not disturb or disorient nesting or hatching sea turtles
- Chapter 2-16-231 Clean Community Ordinance
    - 2-16-240: Litter in Parks (unlawful to deposit litter in any park except in public receptacles
    - 2-16-241: Litter in Oceans, Streams and Rivers, etc. (unlawful to deposit litter in any ocean, river or stream, bay, marsh, or any body of water)
- Section 722 CP Conservation Preservation District

- Section 727 Beach and Dune Protection District

Additionally, it is posted at beach access points that pets are not allowed on St. Simons Island beaches during the hours of 9 a.m. to 6 p.m. between the Saturday before Memorial Day and Labor Day. This applies to areas between 16th Street (#41, East Beach South) and Mallery St. (SSI Pier).

Related to litter control, Glynn County began implementing a new solid waste management strategy of trash-free beaches on St. Simons Island in 2017. Trash-free beaches involve removing trash and recycling receptacles from the beach area and relocating those receptacles to the parking lot areas to encourage all visitors to help maintain clean beaches, reduce solid waste on the beach, and embrace the ideas of reduce, reuse, and recycle. This new initiative places all beach areas under the same "carry in, carry out" policy.

5.4.3. Jekyll Island

In reviewing the JIA Code of Ordinances, the following ordinances pertain to beach-related activities.

- Chapter 4-6 Pets on beaches and in Dunes
- Chapter 10 Environment, Article IV Beach Lighting
    - Sec 10-78 to 10-85 (to protect sea turtles from adverse effects of artificial lighting)
- Chapter 14 Flood Prevention, Article III Provisions for Flood Hazard Reduction
    - Sec 14-89 to 14-96
- Chapter 18 Offenses and Miscellaneous Provisions
    - Sec 18-13 Dumping into creeks, rivers, etc.
    - Sec 18-16: Use of state beaches
    - Sec 18-17: Fireworks (unlawful to use in the State Park unless authorized by JIA)

Local Ordinance 18-16 outlines rules and regulations of using the public beaches, structures erected thereon, of the Jekyll Island State Park. A few sections have been condensed slightly for length.

1. *Swimming.* Signage at all public entrance points properly notify all persons there are no lifeguards on duty at the Jekyll Island State Park. All persons entering the water off the public beaches are doing so at their own risk.
2. *Placement of litter.* It shall be unlawful to throw, place, deposit, sweep or scatter, or cause to be thrown, placed, deposited, swept, or scattered, any paper, food, cigarette butts, bottles, cans, trash, fruit peelings or other refuse upon the beaches or structures erected thereon. Beach goers must have their trash in a container at all times.
3. *Glass or breakable containers.* It shall be unlawful for any person to take or carry upon the beaches or structures erected thereon any glass or breakable containers.
4. *Disturbing dune vegetation.* It shall be unlawful or any person to pick, gather, remove, walk in the dunes, or otherwise disturb the vegetation present on sand dunes, including sea oats. Further, it is prohibited for any person to enter in any area that has been marked by GADNR as an area designated for the protection of nesting sea turtles and shorebirds.
5. *Pets.* It shall be prohibited for pets to be off leash or running free on the beaches and dunes of Jekyll Island at any time. To protect nesting sea turtles and shorebirds, it is further

prohibited for a pet, whether leashed or unleashed or otherwise, to be on the beaches or in the dunes of Jekyll Island from the boardwalk at the south dunes picnic area (latitude 31.031854, longitude -81.415358) south and around the southern tip of the island north to a point (latitude 31.015594, longitude -81.433926) or equivalent to 2,000 feet south of the St. Andrews picnic area.

6. *Horseback riding.* It shall be prohibited for any person to bring or in any way allow a horse to be on the beaches and dunes of Jekyll Island at any time. Excluded from this prohibition are licensed vendors of the Jekyll Island Authority who have received written permission from the authority to engage in any activity involving the use of horses on the beaches of Jekyll Island.
7. *Motorized vehicles.* It shall be unlawful for any person to take any motorized vehicle on to the beaches or structures erected thereon. This includes automobiles, trucks, motorcycles, all-terrain-vehicles and similar motor driven vehicles and craft. This does not include properly marked emergency vehicles while in the course of an emergency operation, or maintenance/utility vehicles in the employ of the Jekyll Island Authority or similar governmental entity and engaged in a legitimate operation.
8. *Motorized watercraft.* It shall be unlawful for any person to operate any motorized watercraft, such as a jet ski, motorboat, and/or any similar craft in violation of the rules and regulations as maintained and enforced by the U.S. Coast Guard and GADNR.
9. *Wind-powered crafts.* To protect nesting sea turtles and shorebirds, it is prohibited for any person to use or operate a kite buggy, beach-capable wind surfer or any other wind-powered transport on the beaches or in the dunes of Jekyll Island from the boardwalk at the south dunes picnic area (latitude 31.031854, longitude -81.415358) south and around the southern tip of the island north to a point (latitude 31.015594, longitude -81.433926) or equivalent to 2,000 feet south of the St. Andrews picnic area.
10. *Fires.* It shall be unlawful for any person to build or maintain any type of open fire on the beach, including any type of charcoal or gas fire, whether or not in a grill or similar container.
11. *Disorderly conduct; endangerment of self or others.* It shall be unlawful for any person to come upon the beaches or structures erected thereon, and individually or in concert with others, do any act or create any condition which does or is calculated to encourage, aid, abet, or start a riot, public disorder or disturbance of the peace; and it shall not be necessary to prove that that person was solely responsible for that riot, public disorder or disturbance of the peace, but only that his appearance, manner, conduct, attire, condition, status or general demeanor was a motivating factor that resulted in the riot, public disorder or disturbance of the peace.
12. *Nudity.* No nudity on beaches.
13. *Beer kegs.* The presence of beer kegs on the beach is often associated with underage drinking, littering, public intoxication and disorderly conduct and because such activities are in direct conflict with family recreation, such containers and similar devices for dispensing of large quantities of alcoholic beverages are expressly prohibited.
14. *Jumping or diving from pier or public structure.* It shall be unlawful for any person to jump or dive from any pier or public structure except those that might be specifically built for

that purpose and as may be specifically authorized in connection with a properly authorized special event.

15. *Walking or climbing on rocks.* It shall be unlawful to walk or climb upon the rocks, or other natural formations. Walking on existing beach trails that traverse through the rocks is allowed.
16. *Lanterns and flashlights.* To protect nesting turtles and shorebirds, and in accordance with Jekyll Island Authority Ordinance, section 10-81 regulating beach lighting, the use of lanterns or flashlights on the nesting beaches is limited to lanterns and flashlights that produce light of 580 nm or longer wavelength (true red).

5.5. Shoreline Protection Ordinance Review

Glynn County's "Beach and Dune Protection District Ordinance, Section 727" includes some contradictory language regarding setbacks. The following observations were made after reviewing the current ordinance:

- The Shore Protection Act establishes the jurisdictional area of the State related to the beach and dune system, and it includes the area from 3 miles offshore to the landward (western) boundary of the dynamic dune field. They actually define the landward boundary of the dynamic dune field based on live native trees that are 20' or larger or structures that predate July 1, 1979. GA DNR staff have to identify the jurisdictional line in the field.
- Any land disturbance in this jurisdictional area needs either a permit or a letter of permission from the Shore Protection Committee.
- Any projects permitted by the Shore Protection Committee must comply with local zoning, and local governments are permitted to have stricter requirements than the State. So, the State could allow for an activity or use that the local government does not, and the Shoreline Protection Committee would not be able to issue a permit in this case.
- Glynn County has established an additional "setback" to the State's jurisdictional area and restricts uses in the setback area.
- The County establishes the setback area, not based on the Jurisdictional line, but rather based on the toe of the dune or the highwater mark, meaning that your setback line could cross back and forth across the jurisdictional line.
- Tybee also has a setback for the dunes that is also based on the toe of the dune. But Tybee's setback is only 10 feet whereas Glynn County's setback is 40 feet. The only uses that the Tybee ordinance contemplates in their setback are beach crossovers, but Glynn County has more conditional uses.

Based on these observations, there are several issues that the County could consider addressing:

- Does the County wish to regulate uses within the jurisdictional area to a higher/stricter level than the State? For example, does Glynn County want to prevent homebuilding in this area?
- Does the County wish to establish a setback from the jurisdictional line where uses are more restrictive than the underlying zoning? If so, this setback line should likely be set from the

State Jurisdictional line, as opposed to having a line based on the toe of the dune or any other natural feature that is different than the jurisdiction line established by the State

These observations and issues were conveyed to the County's Zoning Update consultant, Tunnel-Spangler and Associates (TSW). Based on their complete review, they prepared a draft of potential policy solutions to consider that will be presented to the Board of Commissioners. This topic on environmental regulations reads as follows:

Existing environmental regulations protect beaches and dunes but do not go beyond state requirements for stream or marsh setbacks, allow shorelines and marshes to migrate over time, or otherwise address the impacts of flooding and sea level rise.

- *Potential solution A:* Adopt the 50-foot marsh setback language from state law (which is currently not enforced) as a county requirement.
- *Potential solution B:* Increase the existing 25-foot marsh setback from state law (the section that is currently enforced) to 50 feet, and reduce or remove exemptions for lots platted prior to 2015, lots on which more than 18% of the area falls in the buffer, and other exemptions.
- *Potential solution C:* Prohibit the construction of sea walls in the marsh buffer, but provide standards for "living shorelines" that would provide natural protection from erosion.
- *Potential solution D:* Increase the stream setback from the state-mandated 25 feet to a total of 75 feet average, with a 50-foot minimum width and a 150-foot maximum width.
- *Potential solution E:* Clarify that the Beach and Dune Protection overlay district still applies, and align its requirements with the Georgia Shore Protection Act.
- *Potential solution F:* Establish building regulations for the Coastal High Hazard Area (the area closest to the coast and subject to wave action during storms).
- *Potential solution G:* Adopt coastal setbacks or other standards that increase or expand over future decades, to allow time for property owners and developers to adapt, and to respond to rising sea or flood levels.
- *Potential solution H:* Adopt a setback from wetlands.
- *Potential solution I:* Rezone sensitive coastal or environmental areas to CP Conservation Preservation.
- *Potential solution* J: Establish a coastal overlay zone to regulate uses, land disturbance, setbacks, pervious cover, finished floor elevation, and other aspects of development near the coast or in sensitive areas.
- *Potential solution* K: No change.

5.6. Environmental Considerations

The environmental section of this document details water quality monitoring (5.6.1), wildlife considerations (5.6.2), and stormwater management (5.6.3). Within the wildlife section, shorebirds, sea turtles, and pets on beaches are the primary topics.

5.6.1. Beach Water Quality Monitoring

The GADNR-CRD, Beach Monitoring Program was developed to protect swimmer health. Starting in 1999, CRD monitored the swimming beaches in Glynn County for the presence of fecal coliform bacteria. Fecal coliform is an indicator bacterium, which when found in the water indicates the presence of human or animal fecal matter. Fecal matter can contain pathogens (bacteria, virus, etc.), which can cause human illness.

Passage of an amendment to the federal Clean Water Act known as the Beaches Environmental Assessment and Coastal Health (BEACH) Act of 2000 (PL 106-284) addresses significant new swimmer protection provisions. The BEACH Act requires states to adopt water quality criteria utilizing enterococcus bacteria as the standard indicator for salt-water recreational beaches. The Act also requires states to develop procedures for notifying the swimming public when high levels of bacteria are found.

In April 2004, CRD entered a new phase of beach monitoring and public notification based on the Environmental Protection Agency's recommended levels of enterococcus bacteria for marine recreational waters. Enterococcus, like fecal coliform, is an indicator bacterium. Research has shown the enterococcus is a better indicator of the presence of fecal matter in salt water. EPA has finalized a new standard for bacterial water quality: a single sample maximum of 104 enterococcus CFU per 100ml or a geometric mean of 35 enterococcus CFU per 100ml. CRD has worked in partnership with Glynn County and the Glynn County Health Department to develop procedures to notify the public. Public advisory signage has been installed at beach access points on St. Simons Island and Jekyll Island. The Coastal Health District have prepared templates for press releases to issue health advisories in the event of high bacteria levels.

CRD tests the beaches on St. Simons Island and Jekyll Island once per week from April to October and every other week from November to March, at five locations on St. Simons Island and six locations on Jekyll Island. These include the following locations:

- St. Simons Island Beach Monitoring Locations
    - SSI North – Goulds Inlet, from 15th Street to 10th Street
    - SSI East Beach Old Coast Guard, from 10th Street to Driftwood Drive
    - SSI Massengale Park, from Driftwood Drive to Cedar Street
    - SSI 5th St. Crossover, from Cedar Street to 9th Street
    - SSI Lighthouse, from 9th Street to Pier
- Jekyll Island Beach Monitoring Locations
    - Driftwood, from Beach Kilometer Marker 1 to Tallu Fish Lane
    - Jekyll North, from Old Picnic Area to Brice Lane
    - Jekyll Capt. Wylly, from Brice Lane to Beach Pavilion
    - Jekyll Convention Center, from Beach Pavilion to Beach Deck
    - Jekyll South Dunes, from Beach Deck to South Water Tower
    - Jekyll 4-H Camp, from South Water Tower to Macy Lane

CRD tests the beaches that are under permanent advisory once per quarter, and this includes two locations on Jekyll Island: (1) Jekyll Clam Creek from Clam Creek to Old North Picnic Area and (2)

Jekyll St. Andrews from St. Andrews Picnic Area to Macy Lane. CRD also tests beaches on Sea Island at two locations (Sea Island North and Sea Island South) on a monthly basis from April to October, as well as the Blythe Island Regional Park Sandbar at this frequency.

When elevated levels of bacteria are found, CRD notifies the Health Department. The Health Department notifies Glynn County or the JIA and issues a press release notifying the public of the swimming advisory, and it is posted on the Coastal Health Department's webpage at: https://www.gachd.org/programs-services/environmental-health-2/beach_water_testing/. Then, the County or the JIA activates the advisory signs in the affected area of beach, and the Environmental Protection Division (EPD) will investigate to find the source. CRD continues to test the affected beach until the bacteria levels drop to an acceptable level. The Health Department then lifts the swimming advisory and the County or the JIA de-activates the advisory signs. CRD has placed beach information on their website at: https://coastalgadnr.org/HealthyBeaches, as well as current conditions. Visitors can also subscribe to an e-mail notification system, as a free service, to receive an e-mail each time there is a beach swimming advisory.

5.6.2. Wildlife

There are two important groups of wildlife directly using the beach environment for food, shelter and reproduction – shorebirds and sea turtles. Both will be addressed in detail in this section. Information for other groups of wildlife such as neo-tropical migrants, diamondback terrapins, wood storks, alligators, right whales and bottlenose dolphins can be found at the UGA Marine Extension and Georgia Sea Grant Brunswick Station, the GA DNR-CRD Office, or the U.S. Fish & Wildlife Service (USFWS) Coastal Refuges Office.

Jekyll Island and St. Simons Island are important to wintering sea birds and shorebirds, and occasionally nesting sea birds. Beach-nesting birds are a high conservation priority for the Wildlife Resources Division of the DNR (DNR-WRD). Glynn County and the JIA should coordinate with the DNR-WRD to protect the areas where birds are nesting, to achieve mutual conservation goals. State nongame biologists can assist in sign placement and rope barriers to keep the public away from beach nesting birds.

Dogs can disrupt and harass birds on the beach. The JIA has a requirement in their Code of Ordinances that it is prohibited for pets to be on beaches or in the dunes from the boardwalk at South Dunes Picnic Area south and around the southern tip of the island north to a point that is 2,000 feet south of the St. Andrews Picnic Area due to nesting shorebirds and sea turtles. Glynn County should consider a similar modification to their ordinance in the area from just north of Coast Guard Station to Gould's Inlet, as this is a similar critical habitat.

Nesting sea turtles are an important part of beach ecosystems in the Southeast. In case of future beach projects, the GADNR-WRD and Non-Game Program provide beach nourishment guidelines. The protection and maintenance of nesting habitat is considered a high priority in the USFWS/National Marine Fisheries Service (NMFS) Recovery Plan for the loggerhead turtle, *Caretta caretta*. The purpose of these guidelines is to minimize the effects of beach nourishment or other beach projects on sea turtle reproduction and to ensure nourished beaches are

compatible with native beaches. The following are general guidelines for beach nourishment projects:

- Construction shall be allowed primarily outside the loggerhead turtle nesting and hatching season (May 1-October 31). Deviations from this provision will require coordination with the GADNR and approval prior to the initiation of construction.
- Sediment grain size of fill material shall be free of construction debris, rocks, or other foreign matter and shall not contain, on average, greater than 10% fines (i.e. silt and clay, passing through a #200 sieve, approximately 0.075 mm) and shall not contain, on average, greater than 5% course gravel or cobbles (retained by #4 sieve, approx. 4.5 mm). Sand-grain size on Georgia beaches is generally between 0.15 and 0.3 mm.
- The sediment composition of Georgia beaches is generally fine-grained silica sand (›90%) with very little fragmented shell. Shell content should remain below 15% of total volume.
- Sediment color should be between 10yr6.5/1 and 10yr7.0/1 on the Munsell soil color chart.
- Sand compaction should be measured at a maximum of 500 ft. intervals along the fill area. Compaction will be measured at 3 stations along three transects corresponding to the landward, middle and seaward portion of the fill berm. At each measurement station, a cone penetrometer shall be pushed to depths of 6, 12, and 18 inches three times (3 replicates) and the compaction readings will be averaged to produce a final reading at each depth for each station. If the average value for any depth exceeds 500 cone penetrometer units (cpu) for any 2 or more adjacent stations, then that area will be cross-tilled from the high tide wave rush to the seaward toe of the dune prior to May 1. If a dune feature is constructed as part of the project, the dune feature should be tested for compaction prior to the planting of vegetation or sand fence construction. If compaction readings are greater than 500 cpu at any of the test depths (6", 12", 18") for 2 consecutive stations, the dune feature should be tilled prior to May 1. The DNR is responsible for performing the compaction testing and informing the local jurisdiction if and where there is a need for tilling on the beach for turtle habitat.
- The constructed beach profile should be gradually sloping rather than an elevated flat terrace to reduce scarping. The beach should be monitored for scarping prior to the nesting season. Escarpments in excess of 18" extending more than 100 ft should be mechanically leveled to natural beach contour prior to May 1.
- Sand fence construction will be in accordance with GADNR guidelines. GADNR Sand Fence Guidelines are designed to allow marine turtle access to nesting habitat and prevent trapping of marine turtles as they return to the sea following nesting.

Both Glynn County and the JIA have beach lighting provisions in their ordinances to address beach front lighting during nesting and hatching season. Because egg-laying females are disturbed by lights, and sea turtle hatchlings orient toward the bright horizon to be able to find their way to the ocean, they can become easily disoriented by artificial sources of lights, such as street and porch lights.

GADNR is responsible for managing and protecting sea turtles in the state, and GADNR's Sea Turtle Conservation Program has several components including management, monitoring, research, and

education. Cooperators locate and protect sea turtle nests, document strandings (compromised sea turtles that are either dead, sick, or injured), perform necropsies on dead strandings, work with the Georgia Sea Turtle Center (GSTC), which is housed on Jekyll Island and operated by the JIA, to provide rehabilitation for live strandings, conduct research, provide technical expertise on anthropogenic activities that have the potential to impact sea turtles (i.e., nourishment, dredging), and conduct education and outreach activities. The GSTC collaborates with GADNR to maintain and produce data for Jekyll Island's sea turtle nesting, and it has substantial capacity.

Nesting sea turtles have been studied on Jekyll Island since 1955. Loggerhead Sea Turtles are the primary species that nest on Jekyll Island, but Green Sea Turtles and Leatherback Sea Turtles have also been observed. Sea turtle nest monitoring and research on Jekyll Island follows statewide management protocols, which involve identifying nests, protecting them from predators with wire mesh, and monitoring incubation period and hatching success. The GSTC also performs overnight patrols to identify and tag as many nesting females as possible. In collaboration with a regional study led by University of Georgia researchers, one egg from every nest and one skin biopsy from every nesting female are collected to genetically assign nests to individual females. Additional sea turtle research led by the GSTC includes collaborations to study injury rates, environmental contaminants, behavior following abandoned nesting attempts, nest incubation temperature, disease monitoring, and a variety of other veterinary and health related topics.

Sea turtle nesting monitoring data is available through the Sea Turtle Nest Monitoring System website (http://www.seaturtle.org/nestdb/?view=3), and it includes information dating back to 2009. The numbers of nests and false crawls and the percentage of relocated nests are described in Table 5.2 for the four barrier Islands in Glynn County. On average, over the last decade, Jekyll Island had the most nests per year at 157.4 and St. Simons Island had the least at 5.6. On average 287.6 false crawls were experienced on Jekyll Island, but only 19% of their nests over the last decade had to be relocated. Nearly three-quarters of the nests on St. Simons Island have been relocated over the last decade, due to turtles nesting in less ideal conditions. The number of reported false crawls on St. Simons Island was also the smallest of the four Glynn County barrier islands.

Table 5.2: Summary of Sea Turtle Nesting in Glynn County during the 2010s.

Year	Nests				False Crawls				Relocated (%)			
	Jeykll	LSSI	SI	SSI	Jeykll	LSSI	SI	SSI	Jeykll	LSSI	SI	SSI
2010	140	111	87	5	270	151	52	3	14%	40%	55%	100%
2011	177	97	61	1	238	124	51	1	17%	38%	62%	100%
2012	197	116	102	6	356	158	126	6	47%	60%	42%	67%
2013	174	123	87	5	357	133	75	5	5%	53%	70%	40%
2014	107	53	41	1	163	45	18	8	5%	51%	61%	100%
2015	160	124	111	4	261	121	81	6	10%	38%	35%	100%
2016	170	223	110	13	416	268	132	13	11%	14%	35%	54%
2017	129	110	68	7	258	100	50	6	26%	16%	31%	100%
2018	121	106	70	8	216	112	47	7	31%	13%	37%	50%
2019	199	237	114	6	341	193	93	13	22%	21%	42%	33%
Average	**157.4**	**130**	**85.1**	**5.6**	**287.6**	**140.5**	**72.5**	**6.8**	**19%**	**34%**	**47%**	**74%**

Note: JI = Jekyll Island, LSSI = Little St. Simons Island, SI = Sea Island, and SSI = St. Simons Island

Data Source: Sea Turtle Monitoring System, http://www.seaturtle.org/nestdb/?view=3

Jekyll Island and Little St. Simons Island are the two most common nesting islands in Glynn County, so additional information on their habitat and monitoring capabilities are presented. The beach on Jekyll Island extends about 14.7 km. The northern section, or 'Driftwood Beach' (~2 km) has limited nesting habitat. Due to tidal flow, there is limited access to this section of beach. The middle third of the beach has rock armoring extending approximately 3-4 km and no suitable nesting habitat. In this area, there are a number of false crawls along this rock wall, and occasionally a nest that is then relocated. The rest of the beach (8-9 km) provides decent nesting habitat for sea turtles. Little St. Simons Island has prime coastal habitat that provides vital nesting and foraging stopover grounds for over 280 species of birds, including some that are endangered or threatened. The 7 miles of undeveloped beaches provides high quality nesting habitat for Loggerhead Sea Turtles. The beach is growing through accretion at an average rate of 2-3 feet per year. Since 1987, LSSI has worked with GADNR non-game conservation program to monitor the beaches for sea turtle activity. A DNR technician is stationed on the island and works with island staff throughout the sea turtle nesting season to monitor the beach.

5.6.3. Storm Water Management

Stormwater management on St. Simons Island and Jekyll Island directly affect beach water quality. Glynn County is currently working to adopt and implement the Coastal Stormwater Supplement (CSS) to the Georgia Stormwater Management Manual (GSMM) by December 6, 2020, per their municipal separate storm sewer system (MS4) permit. The update to the County's Water Resources Protection Ordinance will require green infrastructure and low impact development (GI/LID) stormwater management practices, such as bioretention, bioswales, and permeable pavement, to address water quality for new development and redevelopment. The function of GI/LID practices is to infiltrate stormwater and improve water quality. There are several examples of bioretention, permeable pavement, and constructed stormwater wetlands at beach access points on both on St. Simons Island and Jekyll Island. St. Simons Island has approximately 26,000 square feet of permeable pavement at Neptune Park, near the St. Simons Island Fishing Pier; an example is shown in Figure 5.9. Bioswales or bioretention are located on Jekyll Island at each of the new or renovated hotels, as well as Oceanview Beach Park, The Beach Pavilion, Great Dunes Park, and Ocean Club. A constructed stormwater wetland was also installed at Oceanview Beach Park includes bioretention, pervious concrete, and a constructed wetland, as shown in Figure 5.10.

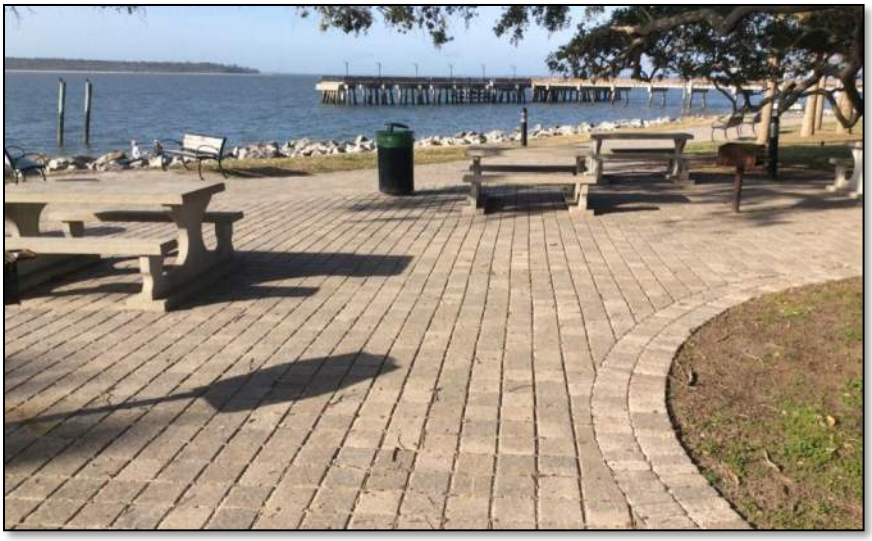


Figure 5.9: Permeable Pavement at Neptune Park, near St. Simons Island Fishing Pier.

Figure 5.10: Oceanview Beach Park GI/LID Practices – Bioretention with Pervious Concrete Border (left) and Constructed Stormwater Wetland (right).

5.7. Current and Future Beach Management Practices

5.7.1. St. Simons Island Rock Revetment – Designed

On March 9, 2018, Governor Deal signed House Bill 683 which designated $10 million to the OneGeorgia Authority for beach re-nourishment projects. OneGeorgia is the funding mechanism for the Georgia Department of Community Affairs, and they sought to issue a one-time grant in an amount up to $2.5 million to Glynn County. Funds allocated could be used for necessary studies, planning/consulting/engineering activities, obtaining necessary state and/or federal permits, construction or reconstruction of beaches and/or dunes (including dredging and placement of sand), location-appropriate natural vegetation necessary to maintain dunes, construction/ reconstruction of dunes, installation of rock revetments, or other activities deemed appropriate by

the OneGeorgia Authority. The agreement was extended to April 30, 2021, at which time the County has to be complete with all work or forfeit the balance of funds. As of July 2020, the project has been designed and contractor selected, but they are awaiting permit approval from Army Corps and GADNR, as well as turtle nesting season to be over.

When the "Johnson Rocks" were originally designed and installed in the 1960s, they were at an elevation of +7.5' NAVD88. Over the past five decades, the revetment has been subject to settlement, beach erosion, overtopping, and direct storm effects. Large sections of the revetment were dislodged during hurricanes Matthew and Irma. Glynn County identified the need to conduct maintenance and repairs along 9,280 linear feet for the purpose of coastal storm protection. The new design has a proposed crest elevation of +8.5' NAVD88, which is one additional foot greater than the original design. The additional elevation will increase the resiliency of the structure by accounting for sea level rise since original construction, as well as providing additional coastal storm protection. Copies of design plan sheets are available in Appendix F. Due to funding availability and private property coordination, the project is divided up into five phases, where Phase 1 will be the focus of the OneGeorgia grant. Phase 1 includes rehabilitating revetments fronting public property only, which covers Neptune Park and beach access points from #1 Wyley Street to #23 Arnold Road (Figure 5.7). Phase 1 will address 2,695 linear feet of the total length, which is nearly 30%. This project will require approximately 5,200 tons of rock.

Figure 5.11: Photos of Johnson Rocks at Neptune Park (left, low tide; right, high tide)

5.7.2. Jekyll Island Rock Revetment – Completed

The JIA recently completed a large rock revetment project on the mid-northern section of the island. A new rock revetment was constructed at an elevation of 9.5' NAVD88 at the landward end of the revetment and sloping up to 10.0' NAVD88 at the landward limit. One of the more vulnerable sections near Villa by the Sea, The Cottages, and extending south to King Avenue had a 9,800 continuous linear foot section (Figure 5.12). Moving south, a few other segments that needed repair due to erosion were also addressed and patched. Overall, the total length of construction was approximately 16,000 linear feet.

Figure 5.12: Recently Completed Rock Revetment Project on Jekyll Island.

5.7.3. Jekyll Island North End Shoreline Restoration ("Sand Motor") – Conceptual Design

At the 2019 Georgia Environmental Conference on Jekyll Island, Heath Hansell, Coastal Engineer at ATM and Ben Carswell, JIA Director of Conservation, presented a talk "Engineering with Nature: Jekyll Island's Vision for North End Shoreline Restoration." This project outlined the history and sand dynamics how the northern tip, at Driftwood Beach, is actively eroding. Looking into a holistic approach with the northern end of the island and to engineer with nature, the concept of a "Sand Motor" approach was presented. The channel into the St. Simons Island Sound and erosion at the northern end of Jekyll Island resembles the dynamics at Holden Beach, NC, where strategic nearshore placement of sand allowed for an engineered shoal attachment. This provides numerous habitat and ecosystem benefits to migrate and spread sand naturally. A visualization is presented in Figure 5.13.

Figure 5.13: "Sand Motor" Project Visualization – Nearshore Placement

Important next steps are to pursue grant funding sources, conduct stakeholder/partnership engagement, and start with preliminary studies to find quality material through sand source investigations and studying coastal wave-sediment transport. Due to the interest in this project, and general interest to explore nearshore placement on either island, it is important to start developing plans to mitigate future disasters and to engage with Army Corps with these plans to pursue assistance whether as a technical resource or potential funding opportunities. Without these plans in place, and identified projects, Glynn County is missing out on an opportunity to participate in the Army Corps' sand sharing projects.

5.7.4 South Atlantic Coastal Study (SACS) – Plan Under Development

The South Atlantic Coastal Study (SACS) is a four-year federal study led by the U.S. Army Corps of Engineers that began in 2018 and is expected to have a final report, and accompanying technical reports by August 2022. SACS is a coastal risk assessment that analyzes risks from storms and sea level rise along 65,000 miles of tidally-influenced shorelines in six states, including NC, SC, GA, FL, AL and MS, and the territories of Puerto Rico and the U.S. Virgin Islands. Brunswick/Glynn County is one of the SACS' focus areas. This study discusses rising seas, a more aggressive storm future, and how best to manage the risk posed to the region's most vulnerable resources, and it is modeled closely after the North Atlantic Coast Comprehensive Study (NACCS), which was a Congressional response and precedent-setting vulnerability and flood risk-reduction study completed for the north Atlantic coastline following Hurricane Sandy. SACS will conduct regional analyses of coastal risk and identify initial measures/costs that can address vulnerabilities with emphasis on regional sediment management (RSM) as an actionable strategy to sustainably maintain or enhance current levels of coastal storm risk reduction.

SACS will not develop project-specific recommendations for Congressional authorization, but it will include a suite of recommendations founded on the concept of shared responsibility for risk reduction and highlight high risk areas that are candidates for further consideration and action. The complete list of goals from the U.S. Army Corps of Engineers includes:

1. Provide a Common Operating Picture of Coastal Risk
    - Provide decision-makers at all levels with a comprehensive and consistent regional assessment of coastal risk.
2. Identify High-Risk Locations and Focus Current and Future Resources
    - Enable resources to be focused on the most vulnerable areas.
3. Identify and Assess Risk Reduction Actions
    - Assess actions that would reduce risk to vulnerable coastal populations.
4. Promote and Support Resilient Coastal Communities
    - Ensure a sustainable coastal landscape system, considering future sea level rise scenarios and climate change.
    - Provide information to stakeholders to optimize existing efforts to reduce risk.
5. Promote Sustainable Projects and Programs
    - Develop and provide consistent foundational elements to support coastal studies and projects.
    - Regionally manage projects through Regional Sediment Management and other opportunities.
6. Leverage Supplemental Actions
    - Multiple supplemental studies and construction efforts will inform, and be informed by, the SACS.

Task Force members have been engaged in SACS, and it is recommended to maintain involvement in this study to ensure this region (Brunswick, Glynn County, and Jekyll Island) is well represented and included in the final products created as part of the SACS.

6. Summary and Recommendations for Implementation

The plan represents the assessment phase in which projects to protect shorelines were identified and prioritized. This sets the stage to pursue grant funds to design/permit and implement the near-term and some intermediate priority projects. With some grant sources, more funds are available if the assessment/planning stage, that is included in this plan, has already been completed.

Once the projects identified in this plan begin to get implemented, it is important to focus on some "quick hits" to show successes and get public buy-in, especially if it is a new or different management practice (e.g., living shorelines vs. bulkheads). Additionally, there may be some aspects or design features that need to be adjusted for local conditions, so it will allow for local designers and contractors to learn by doing. Small, successful projects will establish a "proof of concept" and "demonstration site" so that local governments can springboard to pursue implementing multiple, grouped projects that will provide a larger, regional impact. With any project, it is important to plan ahead for the application and permitting timelines.

The overall results and recommendations to address areas with shoreline vulnerabilities are detailed in the tables and figures in Section 4.2. This prioritized list of projects was created through combining the matrix approach described in Section 3.1, analysis of best management practices from Section 2.3, and potential funding sources and partners from Section 4.1. Some projects are individual, stand-alone, and will have little impact on other projects. There are several that could be combined based on geography, cascading effects, or having similar proposed solutions to utilize one permit. It is recommended to combine projects for design/permitting when able, but this might not always be possible due to availability of funds and timelines for implementation.

In some cases, multiple vulnerabilities were combined into one project (e.g., 'J7-J9' and 'J9-J11') because fixing one issue will not address the root cause or long-term accessibility/resource; therefore, it is recommended to seek funding to design the entire project and implement the most vulnerable segments first, as funding is available. Another unique case was larger neighborhood projects or regional issues, and these are noted as 'General' and includes an 'N' in the Site ID# (e.g., 'B1N', 'B7N', 'GM11N', 'GI18N', and 'GI20N'). These projects were prioritized based on the most vulnerable locations in the region/neighborhood. It is likely with many of these projects that as the most vulnerable location is addressed there will be other vulnerable low points, so it is important that a full assessment and design for the area considers cascading impacts. Similar to the previous example, it may be likely that funding for implementation might only be available to address the most vulnerable locations, but it is important to design with the whole area in mind.

Section 5 is primarily a repository of facts for beach management history and practices. However, there are a few important recommendations from this section that are reiterated below:

- The beach profile methodology for data collection should be revisited to allow for streamlined analysis and data management. It is recommended to establish a benchmark for the origin of each profile and give each profile and measurement a unique ID#, so that the point can be reoccupied each time. It is also recommended to set a bearing for each profile to consistently survey the same location.

- Glynn County's "Beach and Dune Protection District Ordinance, Section 727" includes some contradictory language regarding setbacks, and it should be updated.
- Per a review of Glynn County's ordinances, existing environmental regulations protect beaches and dunes but do not go beyond state requirements for stream or marsh setbacks, allow shorelines and marshes to migrate over time, or otherwise address the impacts of flooding and sea level rise. These impacts should be considered when updating the Zoning and Subdivision Ordinance. The County's Zoning Update consultant, Tunnel-Spangler and Associates (TSW), has compiled and presented several alternatives to go beyond state requirements that are included in Section 5.5.
- It is recommended for staff to remain engaged in the U.S. Army Corps of Engineers' South Atlantic Coastal Study (SACS) to ensure this region (Brunswick, Glynn County, and Jekyll Island) is well represented and included in the final products created as part of the SACS.

Appendix A – Matrix Results for Shoreline Vulnerability Projects

As a supplement to the tables presented in Section 4, the detailed list of matrix results for each project are presented in the following tables by jurisdiction.

Table A.1. Brunswick Shoreline Vulnerability Projects: Matrix Results

ID#	Site Description	Shoreline Change	Infrast. Type	Infrast. Proximity	Vulner. Population	Ownership	Habitat/ Veg	SLR	Flood Zone	Frequent flooding	Erosion	Total Score	Rank	Priority
		Multiplier	Score	Score	Score	Score	Score	Score	Score	Score	Score			*Based on Rank*
B1N	Riverside Drive Neighborhood Flooding	7	7	3	0	0	3	5	3	3	0	**168**	**13**	**Long-Term**
B2	Flooding on Hwy 17 at Torras Causeway	7	10	0	0	2	0	5	3	5	0	**175**	**12**	**Long-Term**
B3	Palmetto Cemetery Erosion	7	10	10	5	5	5	3	3	0	5	**322**	**1**	**Near-Term**
B4	Greenwood Cemetery Erosion	7	10	5	5	5	0	3	3	0	1	**224**	**7**	**Intermediate**
B5	T Street Outfall at Academy Creek	7	10	10	5	5	0	3	3	0	3	**273**	**4**	**Near-Term**
B6	Brunswick Landing Marina Sediment Accumulation	7	5	10	5	0	0	5	3	0	0	**196**	**9**	**Intermediate**
B7N	General: Flooding South of 4th Ave	7	7	0	5	0	0	5	3	3	0	**161**	**14**	**Long-Term**
B8	Howard Coffin Park Ditch Erosion	7	3	10	3	5	5	3	3	5	5	**294**	**3**	**Near-Term**
B9	Marshside Grill Erosion and Flooding	7	5	10	3	5	3	7	5	5	3	**322**	**1**	**Near-Term**
B10	Riverside Drive Causeway	7	7	5	0	5	3	7	5	5	0	**259**	**6**	**Near-Term**
B11	Riverside Drive Overtopping	7	7	3	0	0	3	7	3	5	0	**196**	**9**	**Intermediate**
B12	Lanier Blvd Flooding	7	10	1	3	2	3	3	3	5	0	**210**	**8**	**Intermediate**
B13N	Downtown Flooding	7	10	0	0	0	0	1	3	3	0	**119**	**16**	**Long-Term**
B14	Flooding on Hwy 17 south of Redwood Street	7	10	1	0	2	0	1	3	5	0	**154**	**15**	**Long-Term**
B15	Flooding on Hwy 17 at Lanier Plaza	7	10	10	0	2	3	5	3	5	0	**266**	**5**	**Near-Term**
B16	Academy Creek WWTP	7	10	7	5	2	0	1	3	0	0	**196**	**9**	**Intermediate**

Table A.2. Glynn County Shoreline Vulnerability Projects: Matrix Results

ID#	Site Description	Shore-line Change	Infrast. Type	Infrast. Proximity	Vulner. Population	Ownership	Habitat/ Veg	SLR	Flood Zone	Frequent flooding	Erosion	Total Score	Rank	Priority
		Mult.	Score	Score	Score	Score	Score	Score	Score	Score	Score			*Based on Rank*
Glynn - Mainland														
GM1	Belle Point Parkway	7	7	0	0	0	3	5	3	3	0	147	29	**Long-Term**
GM2	Turtle Creek Bridge	7	10	0	0	2	3	3	3	3	0	168	24	**Intermediate**
GM3	Blythe Island Erosion	7	1	7	0	2	3	0	3	3	5	168	24	**Intermediate**
GM4	Blythe Island / I-95 Erosion	7	7	5	0	2	3	1	3	3	1	175	22	**Intermediate**
GM5	Turtle River Park Boat Ramps	7	3	10	0	5	3	3	5	3	1	231	7	**Near-Term**
GM6	River Ridge Rd Flooding	7	7	1	0	0	0	1	1	5	1	112	35	**Long-Term**
GM7	Choke Point at Oak Grove Island Road	7	7	3	0	5	3	5	3	3	0	203	17	**Intermediate**
GM8	Hutchinson Ditch	7	7	1	0	0	3	1	3	5	0	140	30	**Long-Term**
GM9	Altamaha Park Flooding	7	7	10	0	5	5	1	0	5	0	231	7	**Near-Term**
GM10	Pennick Road	7	7	0	0	5	5	1	1	5	0	168	24	**Intermediate**
GM11N	Dolphin/Trout/ Bream/Pike/Bass Neighborhood Flooding	7	7	5	5	0	3	5	3	5	0	231	7	**Near-Term**
GM-12N	End of Crispen Blvd	7	7	5	0	0	0	1	1	3	3	140	30	**Long-Term**
Glynn - Islands														
GI1	Torras Cswy Flooding (Current low points)	7	10	1	0	2	3	5	5	3	3	224	13	**Intermediate**
GI2	King & Prince Erosion	7	7	10	0	0	5	1	5	3	3	238	6	**Near-Term**
GI3	Gould's Inlet	7	7	10	0	5	3	1	3	3	0	224	13	**Intermediate**
GI4	15th St & Ocean	7	7	7	0	5	3	5	3	3	0	231	7	**Near-Term**
GI5	3rd St & Ocean	7	7	7	0	5	3	5	3	3	0	231	7	**Near-Term**
GI6	Myrtle & Postell Beach Access	7	7	10	0	5	5	3	3	3	5	287	1	**Near-Term**

ID#	Site Description	Shore-line Change	Infrast. Type	Infrast. Proximity	Vulner. Population	Ownership	Habitat/ Veg	SLR	Flood Zone	Frequent flooding	Erosion	Total Score	Rank	Priority
GI7	East Beach	7	7	5	0	0	5	1	5	3	3	203	17	**Intermediate**
GI8	5th St & Beachview Access	7	7	10	0	5	5	3	3	3	1	259	3	**Near-Term**
GI9N	Gen. Stormwater: Glynn Haven	7	7	0	0	0	0	5	1	5	0	126	34	**Long-Term**
GI10N	Gen. Stormwater: Harrington's	7	7	0	0	0	0	1	1	5	0	98	37	**Long-Term**
GI11	Massengale Park	7	3	5	0	5	5	1	3	3	0	175	22	**Intermediate**
GI12	Ocean Blvd Erosion near Tide Gate	7	3	10	0	0	3	3	3	0	1	161	27	**Long-Term**
GI13	Ocean Blvd Sidewalk Erosion	7	3	10	0	0	3	3	3	0	1	161	27	**Long-Term**
GI14	Ocean Blvd Headwall Erosion	7	7	10	0	0	3	5	3	0	3	217	15	**Intermediate**
GI15N	Gen. Flooding: S&E of Ocean Blvd	7	10	7	0	0	0	3	3	3	1	189	21	**Intermediate**
GI16	SSI Gateway Flooding	7	10	7	0	5	3	5	3	3	0	252	4	**Near-Term**
GI17	Barnes Plantation Pump	7	7	5	0	0	3	7	3	3	0	196	20	**Intermediate**
GI18N	Gen. Beach Access	7	7	10	0	5	5	3	5	3	3	287	1	**Near-Term**
GI19	Alabama-Forest Park Flooding	7	7	5	0	0	0	0	3	5	0	140	30	**Long-Term**
GI20N	Gen. SSI Marshfront Homes Flooding	7	7	5	0	0	3	5	3	3	3	203	17	**Intermediate**
GI21N	Gen. Stormwater: Sea Palms	7	7	0	0	0	0	3	0	5	0	105	36	**Long-Term**
GI22	Neptune Park	7	3	10	0	5	5	3	3	3	1	231	7	**Near-Term**
GI23	Fort Frederica	7	10	10	0	2	3	3	3	3	1	245	5	**Near-Term**
GI24	Sea Island Cswy	7	10	5	0	0	3	5	5	3	0	217	15	**Intermediate**
GI25	Dunbar Creek WWTP	7	10	5	0	2	0	1	1	0	0	133	33	**Long-Term**

Note: GI12 – A new headwall and tide flap were added in spring 2020, so the previous erosion issue has been addressed.

Table A.3. Jekyll Island Shoreline Vulnerability Projects: Matrix Results

ID#	Site Description	Shoreline Change	Infrast. Type	Infrast. Proximity	Vulner. Population	Ownership	Habitat/ Veg	SLR	Flood Zone	Frequent flooding	Erosion	Total Score	Rank	Priority
		Multiplier	Score	Score	Score	Score	Score	Score	Score	Score	Score			*Based on Rank*
J1	Edge of Sea Wall Erosion	7	5	10	0	5	3	1	3	0	3	210	10	**Intermediate**
J3	Brewery Site	7	10	10	0	5	0	5	5	0	7	294	4	**Near-Term**
J4	Cemetery near Horton House	7	10	10	0	5	0	7	5	5	5	329	2	**Near-Term**
J5-J6	Road to Fishing Pier & Parking Lot	7	3	10	0	5	3	7	3	5	5	287	5	**Near-Term**
J7-J9	North Loop Trail (Pier to Driftwood Access)	7	3	10	0	5	5	10	3	5	7	336	1	**Near-Term**
J9-J11	North End Shoreline Restoration (Sand Motor)	7	3	10	0	5	5	10	3	5	5	322	3	**Near-Term**
J12	Cpt Wylly Rd & Beachview	7	10	3	0	5	0	1	0	0	0	133	13	**Long-Term**
J13	Vehicle Beach Access near Conference Center	7	10	1	0	5	0	1	0	0	0	119	14	**Long-Term**
J16	St Andrews Beach	7	3	5	0	5	0	3	3	3	1	161	11	**Long-Term**
J17	Roadway to Sole Public Boatramp	7	3	10	0	5	3	7	3	3	3	259	6	**Intermediate**
J20	Jekyll Island Electrical Substation	7	10	5	0	5	3	5	3	3	1	245	8	**Intermediate**
J21	JIA WWTP	7	10	5	0	5	3	3	3	3	1	231	9	**Intermediate**
J22	Drainageway North of Golf Course	7	7	5	0	5	0	1	1	0	1	140	12	**Long-Term**
J25	Stable Road & Riverview Drive Outfall	7	10	10	0	5	0	1	3	3	5	259	6	**Intermediate**

Appendix B – Full-Size Maps of Shoreline Vulnerability Projects

In addition to the tables and figures presented in Section 4, full-size (36" x 24") versions of the maps depicting the shoreline vulnerability projects were created for the three major sections of the County. Each map incudes a table depicting the score calculated from the matrix, project rank, prioritization level, and relative cost. These maps also present public access points for boat ramps, fishing piers, marinas, and public beach access. The maps are presented as follows:

- **Mainland Glynn County** (includes City of Brunswick and Mainland Sections of Unincorporated Glynn County)

- **St. Simons Island**

- **Jekyll Island**

Mainland / Brunswick

Inset 1

Inset 2

GM9

GM10

McIntosh

GM7

GM6

GM12N

GM1

GM5

GM4

GM3

GM11N

B3

B14

B10

B1N

B11

B4

B5

B16

GI16

GI1

B2

B15

B6

B8

B9

B13N

GM2

B12

B7N

Shoreline Vulnerability in Glynn County Georgia

Community Identified Hotspots

Priority

- Near-Term
- Intermediate
- Long-Term

Public Access Points

- Boat Ramps
- Fishing Piers
- Marinas
- Public Beach Access

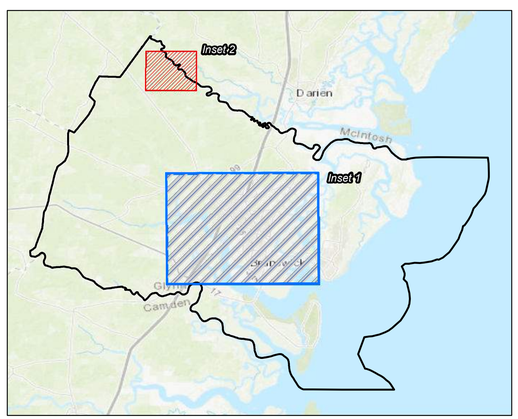
Map ID	Score	Rank	Priority	Cost
GM1	147	29	Long-Term	$$
GM2	168	24	Intermediate	$$$
GM3	168	24	Intermediate	$
GM4	175	22	Intermediate	$$$
GM5	231	7	Near-Term	$$
GM6	112	35	Long-Term	$
GM7	203	17	Intermediate	$$
GM8	140	30	Long-Term	$$$
GM9	231	7	Near-Term	$$$
GM10	168	24	Intermediate	$$
GM11N	231	7	Near-Term	$$$$
GM12N	140	30	Long-Term	$$$
GI1	224	13	Intermediate	$$$
GI2	238	6	Near-Term	$$$$
GI3	224	13	Intermediate	$$$
GI4	231	7	Near-Term	$$
GI5	231	7	Near-Term	$$
GI6	287	1	Near-Term	$$$
GI7	203	17	Intermediate	$$$
GI8	259	3	Near-Term	$$$
GI9N	126	34	Long-Term	$$$$
GI10N	98	37	Long-Term	$$$$
GI11	175	22	Intermediate	$$
GI12	161	27	Long-Term	$
GI13	161	27	Long-Term	$
GI14	217	15	Intermediate	$
GI15N	189	21	Intermediate	$$$$
GI16	252	4	Near-Term	$$$
GI17	196	20	Intermediate	$$
GI18N	287	1	Near-Term	$$$
GI19	140	30	Long-Term	$$$
GI20N	203	17	Intermediate	$$$$
GI21N	105	36	Long-Term	$$$
GI22	231	7	Near-Term	$$$$
GI23	245	5	Near-Term	$$
GI24	217	15	Intermediate	$$$$
GI25	133	33	Long-Term	$$$$
J1	210	10	Intermediate	$
J3	294	4	Near-Term	$$$
J4	329	2	Near-Term	$$
J5	189	11	Long-Term	$$$
J6	287	5	Near-Term	$$
J7-J9	336	1	Near-Term	$$$$
J9-J11	322	3	Near-Term	$$$$
J12	133	14	Long-Term	$$$
J13	119	15	Long-Term	$
J16	161	12	Long-Term	$$$
J17	259	6	Intermediate	$
J20	245	8	Intermediate	$$$$
J21	231	9	Intermediate	$$$$
J22	140	13	Long-Term	$$$
J25	259	6	Intermediate	$$
B1N	168	13	Long-Term	$$$$
B2	175	12	Long-Term	$$$
B3	322	1	Near-Term	$$
B4	224	7	Intermediate	$
B5	273	4	Near-Term	$$
B6	196	9	Intermediate	$$$
B7N	161	14	Long-Term	$$$$
B8	294	3	Near-Term	$
B9	322	1	Near-Term	$$
B10	259	6	Near-Term	$$$
B11	196	9	Intermediate	$$$
B12	210	8	Intermediate	$$$
B13N	119	16	Long-Term	$$$$
B14	154	15	Long-Term	$$
B15	266	5	Near-Term	$$$
B16	196	9	Intermediate	$$$$

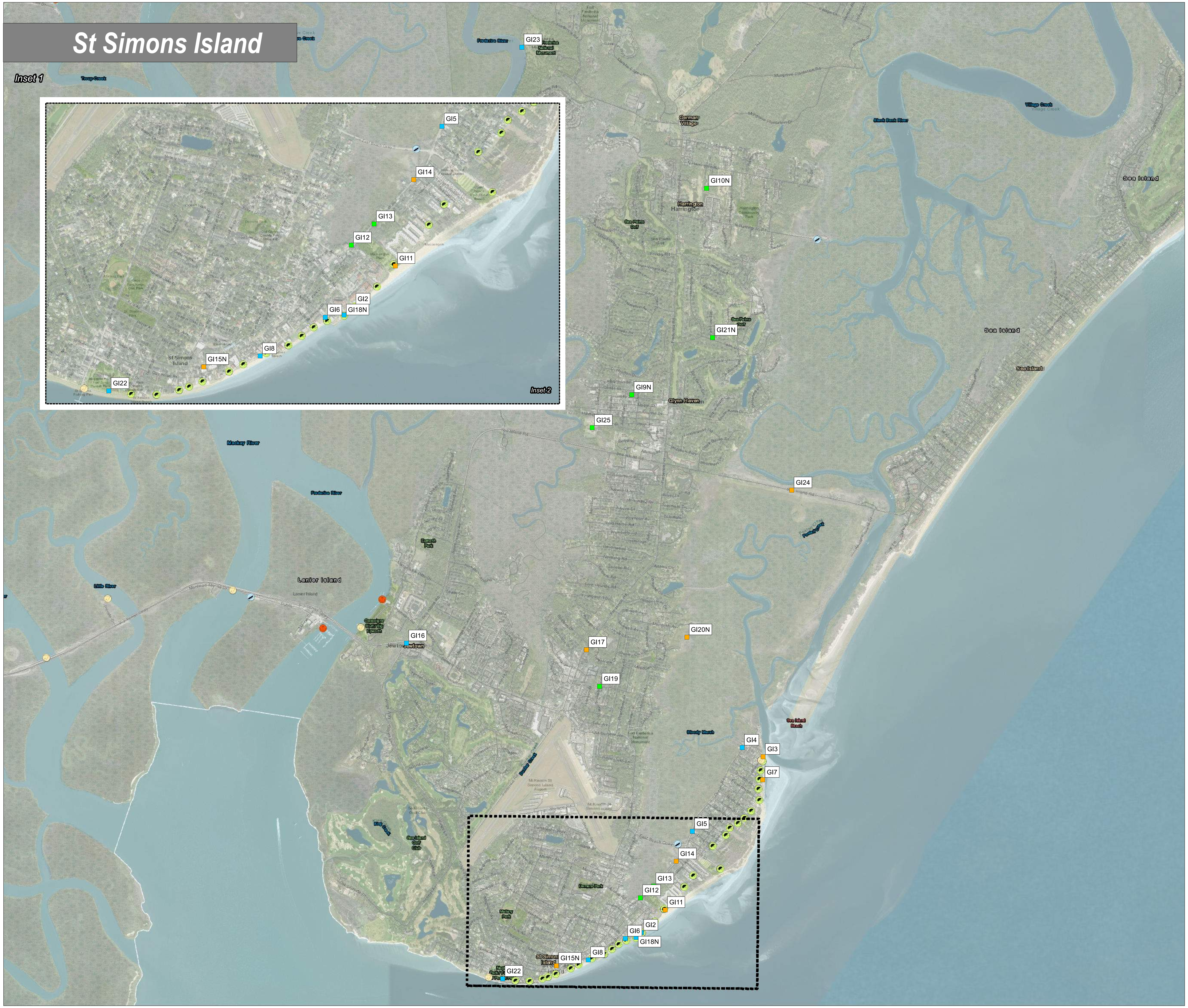
Project Partners:

GEORGIA DEPARTMENT OF NATURAL RESOURCES
COASTAL RESOURCES DIVISION

GMC

0 0.35 0.7 1.05 1.4
Miles





Shoreline Vulnerability in Glynn County Georgia

Community Identified Hotspots

Priority

- Near-Term
- Intermediate
- Long-Term

Public Access Points

- Boat Ramps
- Fishing Piers
- Marinas
- Public Beach Access

Map ID	Score	Rank	Priority	Cost
GM1	147	29	Long-Term	$$
GM2	168	24	Intermediate	$$$
GM3	168	24	Intermediate	$
GM4	175	22	Intermediate	$$$
GM5	231	7	Near-Term	$$
GM6	112	35	Long-Term	$
GM7	203	17	Intermediate	$$
GM8	140	30	Long-Term	$$$
GM9	231	7	Near-Term	$$$
GM10	168	24	Intermediate	$$
GM11N	231	7	Near-Term	$$$$
GM12N	140	30	Long-Term	$$$
GI1	224	13	Intermediate	$$$
GI2	238	6	Near-Term	$$$$
GI3	224	13	Intermediate	$$$
GI4	231	7	Near-Term	$$
GI5	231	7	Near-Term	$$
GI6	287	1	Near-Term	$$$
GI7	203	17	Intermediate	$$$
GI8	259	3	Near-Term	$$$
GI9N	126	34	Long-Term	$$$$
GI10N	98	37	Long-Term	$$$$
GI11	175	22	Intermediate	$$
GI12	161	27	Long-Term	$
GI13	161	27	Long-Term	$
GI14	217	15	Intermediate	$
GI15N	189	21	Intermediate	$$$$
GI16	252	4	Near-Term	$$$
GI17	196	20	Intermediate	$$
GI18N	287	1	Near-Term	$$$
GI19	140	30	Long-Term	$$$
GI20N	203	17	Intermediate	$$$$
GI21N	105	36	Long-Term	$$$
GI22	231	7	Near-Term	$$$$
GI23	245	5	Near-Term	$$
GI24	217	15	Intermediate	$$$$
GI25	133	33	Long-Term	$$$$
J1	210	10	Intermediate	$
J3	294	4	Near-Term	$$$
J4	329	2	Near-Term	$$
J5	189	11	Long-Term	$$$
J6	287	5	Near-Term	$$
J7-J9	336	1	Near-Term	$$$$
J9-J11	322	3	Near-Term	$$$$
J12	133	14	Long-Term	$$$
J13	119	15	Long-Term	$
J16	161	12	Long-Term	$$$
J17	259	6	Intermediate	$
J20	245	8	Intermediate	$$$$
J21	231	9	Intermediate	$$$$
J22	140	13	Long-Term	$$$
J25	259	6	Intermediate	$$
B1N	168	13	Long-Term	$$$$
B2	175	12	Long-Term	$$$
B3	322	1	Near-Term	$$
B4	224	7	Intermediate	$
B5	273	4	Near-Term	$$
B6	196	9	Intermediate	$$$
B7N	161	14	Long-Term	$$$$
B8	294	3	Near-Term	$
B9	322	1	Near-Term	$$
B10	259	6	Near-Term	$$$
B11	196	9	Intermediate	$$$
B12	210	8	Intermediate	$$$
B13N	119	16	Long-Term	$$$$
B14	154	15	Long-Term	$$
B15	266	5	Near-Term	$$$
B16	196	9	Intermediate	$$$$

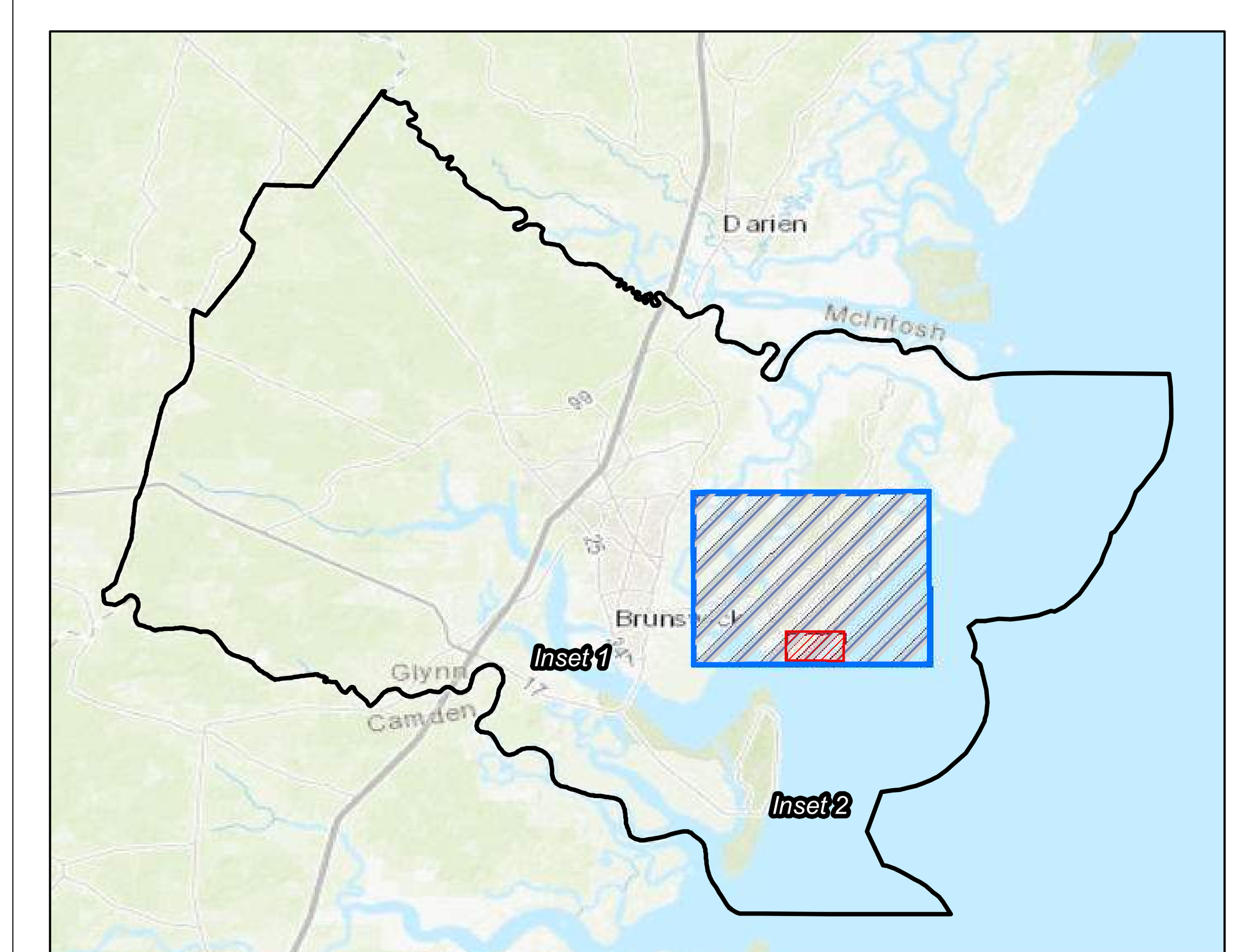
Project Partners:

GLYNN COUNTY GEORGIA

GEORGIA DEPARTMENT OF NATURAL RESOURCES COASTAL RESOURCES DIVISION

GMC

0 0.25 0.5 0.75 1
Miles



Jekyll Island

Inset 1

Inset 2

J5-J6

J7-J9

J9-J11

J4

J3

J22

J12

J1

J25

J20

J13

J21

J17

J16

Jekyll Island

Atlantic Ocean

Shoreline Vulnerability in Glynn County Georgia

Community Identified Hotspots

Priority

- Near-Term
- Intermediate
- Long-Term

Public Access Points

- Boat Ramps
- Fishing Piers
- Marinas
- Public Beach Access

0 0.3 0.6 0.9 1.2

Miles

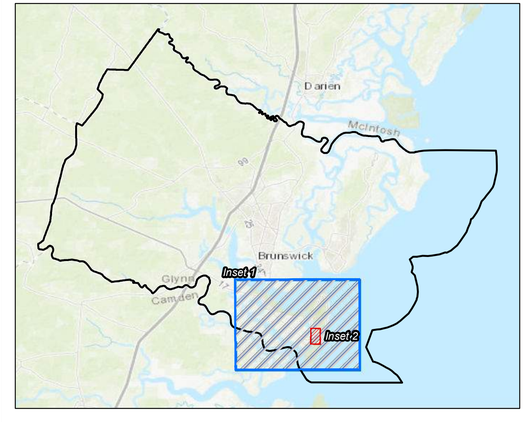
Project Partners:

GLYNN COUNTY GEORGIA

GEORGIA DEPARTMENT OF NATURAL RESOURCES COASTAL RESOURCES DIVISION

GMC

Map ID	Score	Rank	Priority	Cost
GM1	147	29	Long-Term	$$
GM2	168	24	Intermediate	$$$
GM3	168	24	Intermediate	$
GM4	175	22	Intermediate	$$$
GM5	231	7	Near-Term	$$
GM6	112	35	Long-Term	$
GM7	203	17	Intermediate	$$
GM8	140	30	Long-Term	$$$
GM9	231	7	Near-Term	$$$
GM10	168	24	Intermediate	$$
GM11N	231	7	Near-Term	$$$$
GM12N	140	30	Long-Term	$$$
GI1	224	13	Intermediate	$$$
GI2	238	6	Near-Term	$$$$
GI3	224	13	Intermediate	$$$
GI4	231	7	Near-Term	$$
GI5	231	7	Near-Term	$$
GI6	287	1	Near-Term	$$$
GI7	203	17	Intermediate	$$$
GI8	259	3	Near-Term	$$$
GI9N	126	34	Long-Term	$$$$
GI10N	98	37	Long-Term	$$$$
GI11	175	22	Intermediate	$$
GI12	161	27	Long-Term	$
GI13	161	27	Long-Term	$
GI14	217	15	Intermediate	$
GI15N	189	21	Intermediate	$$$$
GI16	252	4	Near-Term	$$$
GI17	196	20	Intermediate	$$
GI18N	287	1	Near-Term	$$$
GI19	140	30	Long-Term	$$$
GI20N	203	17	Intermediate	$$$$
GI21N	105	36	Long-Term	$$$
GI22	231	7	Near-Term	$$$$
GI23	245	5	Near-Term	$$
GI24	217	15	Intermediate	$$$$
GI25	133	33	Long-Term	$$$$
J1	210	10	Intermediate	$
J3	294	4	Near-Term	$$$
J4	329	2	Near-Term	$$
J5-J6	287	5	Near-Term	$$$
J7-J9	336	1	Near-Term	$$$$
J9-J11	322	3	Near-Term	$$$$
J12	133	13	Long-Term	$$$
J13	119	14	Long-Term	$
J16	161	11	Long-Term	$$$
J17	259	6	Intermediate	$
J20	245	8	Intermediate	$$$$
J21	231	9	Intermediate	$$$$
J22	140	12	Long-Term	$$$
J25	259	6	Intermediate	$$
B1N	168	13	Long-Term	$$$$
B2	175	12	Long-Term	$$$
B3	322	1	Near-Term	$$
B4	224	7	Intermediate	$
B5	273	4	Near-Term	$$
B6	196	9	Intermediate	$$$
B7N	161	14	Long-Term	$$$$
B8	294	3	Near-Term	$
B9	322	1	Near-Term	$$
B10	259	6	Near-Term	$$$
B11	196	9	Intermediate	$$$
B12	210	8	Intermediate	$$$
B13N	119	16	Long-Term	$$$$
B14	154	15	Long-Term	$$
B15	266	5	Near-Term	$$$
B16	196	9	Intermediate	$$$$



Appendix C: Photos from Projects with Erosion Issues

During field visits with staff or following meetings with staff, GMC took photographs at most potential project locations or areas with issues. Field visits were conducted in November and December 2019. All sites with erosion concerns were photographed, and representative photos of the conditions at each site are presented in Appendix C. The photos are organized by jurisdiction and presented chronologically based on the Project ID#:

C.1. City of Brunswick Projects

ID: #B-3 – Brunswick, Palmetto Cemetery Erosion

ID: #B-4 – Brunswick, Greenwood Cemetery Erosion

ID: #B-5 – Brunswick, T Street Outfall at Academy Creek WWTP

ID: #B-8 – Brunswick, Howard Coffin Park Ditch Erosion

ID: #B-9 – Brunswick, Marshside Grill Erosion & Flooding

C.2. Glynn County Projects – Mainland

ID: #GM-3 – Blythe Island Erosion, End of Former Hwy 303 Bridge

ID: #GM-5 – Blythe Island, Turtle River Park Boat Ramps

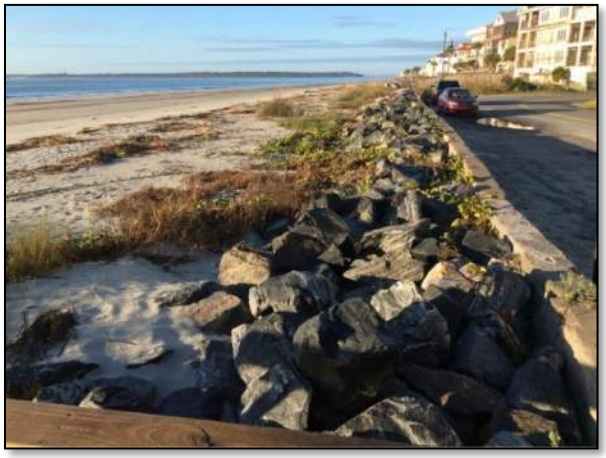
C.3. Glynn County Projects – St. Simons Island

ID: #GI-2 – St. Simons Island, King & Prince Erosion

ID: #GI-3 – St. Simons Island, Gould's Inlet

ID: #GI-6 – St. Simons Island, Myrtle & Postell Beach Access

ID: #GI-8 – St. Simons Island, 5th Street & Beachview Access



ID: #GI-11 – St. Simons Island, Massengale Park

ID: #GI-13 – St. Simons Island, Ocean Blvd. Sidewalk Erosion


ID: #GI-14 – St. Simons Island, Ocean Blvd. Headwall Erosion


ID: #GI-18N – St. Simons Island, General Beach Access (10 beach access bridges were rebuilt from last storms)


ID: #GI-22 – St. Simons Island, Neptune Park

C.4. Jekyll Island Projects

ID: #J-1 – Jekyll Island, Edge of Sea Wall Erosion


ID: #J-3 – Jekyll Island, Historical Brewery Site


ID: #J-4 – Jekyll Island, Historical Cemetery near Horton House


ID: #J-9 – Jekyll Island, North Loop Trail, Blowout (Irma)

ID: #J-10 – Jekyll Island, North Loop Trail, Dune Regeneration (Irma)

ID: #J-16 – Jekyll Island, St. Andrews Beach

ID: #J-17 – Jekyll Island, Roadway to Sole Public Boatramp

ID: #J-22 – Jekyll Island, Primary Ditch from Golf Courses

Appendix D – Task Force Meeting Summaries

This appendix includes the meeting summaries from each Task Force Meeting, as well as a meeting summary from the Consultant Kickoff Meeting with the Project Team. The meeting summaries included in the appendix are as follows:

Coastal Incentive Grant

Shoreline Protection Implementation Plan, Year 1

Meeting Minutes

January 25, 2019

In attendance: Jay Sellers – BGJWSC, Jay Wiggins – GC EMA, Alec Eaton – GC EMA, John Centeno – GC GIS, Bob Nyers – GC GIS, Andrew Strickland – GC GIS, Noel Jensen – JIA, Paul Andrews – GC CD, Pamela Thompson – GC CD, James Drumm – COB Manager, Beatrice Soler – COB Management Analyst, Bren White-Diass – COB Planner, Dave Austin – GC PW, Alan Ours – GC Manager, Ben Carswell – JIA, Jan Mackinnon – Coastal Resource Division DNR, Jennifer Kline - Coastal Resource Division DNR, Kathryn Downs – GC Assistant Manager, Matthew Kent- GC PIO, Chester W. Jackson Jr., PhD. (presenter), and Monica Hardin – GC Finance.

- Introduction by Jay Wiggins, stressed the importance of the Shoreline Protection Implementation Plan and the relevance to all stakeholders' jurisdictions: Glynn County, City of Brunswick, Jekyll Island, and Brunswick-Glynn Joint Water and Sewer Commission.

- Attendees introduced themselves – please see above.

- History and background of project, by Kathryn Downs,
    - The need to have a plan in place due to:
        - Hurricanes Matthew and Irma and their impact on southeast Georgia's coast line
        - No other document to assist in case of another event
    - Opportunity to submit a Coastal Incentive Grant to help offset project costs
        - Shoreline Protection Plan aligns with the County's five-year strategic plan
    - Overview of the Project's Year 1 and 2 tasks
    - The need to form a Shoreline Protection Implementation Task Force to develop the plan.

- Housekeeping/Grant overview items done by Monica Hardin
    - Grant funds are federal dollars
    - Grant will help support a consultant to help create the plan for year 1 and 2.
    - Glynn County will follow federal procurement and release the Request for Qualifications soon
    - The Shoreline Implementation Plan is a multi-Jurisdictional project involving Glynn County, City of Brunswick, Jekyll Island and BG Joint Water and Sewer.
    - Grant requires a dollar for dollar match. Project match will be met with in kind labor. Ms. Hardin stressed the need to keep track of time and document with attached labor tacking sheet.

- Presentation by Dr. Chester W. Jackson, Jr. (C.J.), Georgia Southern University. Power Point will be forthcoming. Presentation highlights:
    - Benefits of sand dunes
        - Need to stabilize a dune through vegetation
    - Pros and cons of block barriers
    - Consider doing a Standardized Sand Study for Glynn County (places the importance of placing compatible sand in the area)
    - All data and maps available at the Georgia Coastal Hazards Portal gchp.skio.usg.edu
    - Project Partners will need to consider the following factors of concern for all three jurisdictions:
        - Tidal inundation
        - Storms
        - Inlet dynamics
        - Human Activity
        - Sea Level Dynamics
- Next Steps, by Monica Hardin
    - The need to release the Request for Qualifications soon
    - Request to have representation from all stakeholders during the selection process of the consultant/firm. Please forward names to Jay Wiggins within the next two weeks.
- Closing Remarks by Jay Wiggins

Meeting start time: 10:06 a.m.

Meeting adjourned at 11:15 a.m.

Meeting minutes respectfully submitted by Monica Hardin

"Shoreline Protection Implementation Plan"

Coastal Incentive Grant (DNR-CRD / NOAA)

Glynn County Project Team / Consultant Kickoff Meeting

August 6, 2019, 10:30 AM – 12:00 PM

Glynn County Pate Building

MEETING NOTES

Attendees: Glynn County (Jay Wiggins, Pamela Thompson, Paul Andrews, Monica Hardin, Kathryn Downs, Alec Eaton), DNR-CRD (Jennifer Kline), GMC (Courtney Reich, Ed DiTommaso, Rob Brown)

I. Review of Ongoing Work and Previous Meetings Associated with this CIG

- There has been one meeting with the larger group on January 25th, in which Dr. Chester Jackson (CJ) from Georgia Southern University made a presentation.
    - Monica has sent the meeting summary and stakeholder list, but CJ did not provide a PowerPoint of his presentation.
- There have been 2-3 Project Team level meetings
- There was an initial meeting prior to the grant to discuss goals

II. Discussion of Project Scope and Roles for County, GMC, and "Shoreline Task Force"

- GMC walked through the Approach and Methodology sheet from their Proposal. A hard copy was provided to those in attendance.
- The group was on board with the tasks presented and approach. A few points of discussion and suggested changes are listed below:
    - A 6-month extension has officially been requested for the grant, so the end date for Year #1 is officially March 31, 2020.
    - Based on the time of award and contract being signed, the schedule will be more condensed in Year #1 (August 2019 to March 31, 2020 – 8 months).
    - This plan should function as a Beach Management Plan that is FEMA compliant and will make the County eligible for FEMA dollars for mitigation actions. Should also consider Tybee Island's Beach Management Plan as they have received funding from ACOE and FEMA.
    - For the recommendations listed in this plan, CRD suggested to separate them based on pre-storm vs. post-storm actions as it deals with how the local governments will implement them.
    - The County is currently working with TSW to update their codes. They would prefer that we provide recommendations for code updates and let TSW handle the actual ordinance development and adoption.
        - In Year #2, there is a task for "Building and Zoning Code Review." Based on a current project by the County, it would be preferred to get these

recommendations in Jan-March timeframe to incorporate in updated codes.

- Public Education Plan
  - The County stated that one activity was needed per year.
  - GMC proposed a Community Survey. There was discussion on how to promote it and whether the Community Task Force would lead and facilitate or if this would be done by GMC. It was added as an agenda item to the afternoon meeting.
  - Other options included: (1) Webpage, (2) participation in CoastFest by having a map where people can dot their erosion locations and have tablets for surveys.
  - Pam is talking to architects and realtor groups in the coming weeks and asked if we can produce a few slides to help staff get the word out about this project.
- Additional Post-Meeting Comment via Email from CRD:
  - This project is important to DNR and we would like to see not only the protection of people but also the preservation of natural resources as a top priority. So, while looking at solutions for vulnerable areas, dune enhancements, living shorelines, and other alternatives should be exhausted first before other hard engineering practices are recommended.

III. Review "Shoreline Task Force" member list

- Current Stakeholders:
  - Glynn County
  - City of Brunswick
  - Jekyll Island Authority
  - DNR-CRD
  - BGJWSC
- Additional Stakeholders to Consider/Add:
  - Sea Island
    - They have a consultant out of SC that helped develop a Sea Level Rise Adaptation Plan.
  - CJ, Georgia Southern / Clarke Alexander, SKIO
  - Consider engaging Jason Evans for student labor
  - Coast Guard
  - Chamber
  - ACOE
  - GPA and Railroads, good stakeholders for year 2.

IV. What are the County's goals for this project/grant?

- This project will serve as a starting point to be more resilient post-disaster and better prepared pre-disaster.
- Part of the purpose is establishing a better management plan for getting reimbursement and funding from FEMA.
- The County currently has a $2.5 Million "One Georgia Grant" to raise the Johnson Rocks (to 8.5'). County is looking for additional funding to raise the entire structure. Currently only able to fund the area bordering residential properties. Want to do the entire structure and some dune restoration with any remaining funds.
- While the "One Georgia Grant" is strictly for the ocean-facing shoreline, the Coastal Incentive Grant will be to look westward at all interior shorelines and plan for the ocean-facing shoreline.
    - Current approaches are reactionary. An example was provided for work on Beachview Drive.
- The development of a maintenance plan will assist with future budgeting and identifying potential funding sources. A maintenance plan should address the following:
    - Plan should address preservation of dunes and hard approaches.
    - Priority is protecting the uplands.
    - Pre-storm and post-storm considerations.

V. General Action Items/Data Needs

- Jennifer Kline to track down and share input from DRRP exercise where people identified erosion and flooding issues (Hagerty has this information/maps/notes).
- Get a list of existing projects completed by County to address erosion and shoreline change issues (i.e., Beachview Drive near East Beach).
- County GIS has beach profiles, GMC to contact County GIS Department.
- GMC to request data (SLAMM Model) from Mike Robinson/Clark Alexander.
- Dave Austin should have a list of flooding hot spots
- Develop a choke points/hotspots layer in GIS based on public works info.
- Pam already provided County's CRS scoring sheet (*received*).
- County Project Team to discuss with GIS Department to ground truth King Tide this fall with drones (especially for City of Brunswick areas).

"Shoreline Protection Implementation Plan"

Coastal Incentive Grant (DNR-CRD / NOAA)

Shoreline Task Force Meeting

August 6, 2019, 2:00-3:30 PM

Glynn County Pate Building

MEETING NOTES

I. Review Grant/Project Scope, Schedule, and "Shoreline Task Force" Role

- Grant/Project Scope
  - GMC reviewed the scope of work and activities for Year #1 of the Grant (August 2019 to March 31, 2020).
  - Focus of Year #1 is a "Shoreline Assessment and Implementation Resiliency Plan."
  - Year #2 will explore Sea Level Rise for critical facilities and impacts of sea level rise to create a "Sea Level Rise Response and Implementation Plan."
- Glynn County's current activities
  - One Georgia Grant for adding to the Johnson Rocks
  - County is working on a Zoning Ordinance update. GMC will provide "Shore Protection Zone" and Building Code recommended changes for the County's consideration and use by the County's consultant during the ordinance update.
- Project Goals
  - Improve access to FEMA money and other funding mechanisms
  - Pre-storm and Post-storm recommendations
  - Maximize CRS points (where possible)
- Shoreline Task Force (those in attendance at today's meeting)
  - GMC proposed quarterly stakeholder meetings.
  - Role: help guide the planning process and to be a sounding board
  - Discussion of others not present today that should be involved:
    - Georgia Power (current local position is vacant)
    - Okeefenokee Co-op (Jay Wiggins has contact)
    - Clarke Alexander (UGA Skidaway) and Chester Jackson (GA Southern)
    - Army Corps
    - Georgia Ports Authority
    - Georgia DOT
    - Cable (Comcast/Xfinity)
    - Telecom
    - Sea Island
    - Golden Isles Convention and Visitors Bureau (Scott McQuade)
- Other areas to focus on and consider:
  - Focus on vulnerable areas, mainly in the coastal flooding zone.

- Altamaha Park is another area to include, as it has some issues with flooding (riverine).
- Information from Georgia Power to see infrastructure they have that's vulnerable?

II. Discussion of Project Goals for Participants

- BGJWSC: System resiliency. Being able to stand up services quick and harden facilities. They have GIS data from CREAT tool of flooding data and a study/report on sea level rise that was created through the DRRP. Lift stations, water facilities, etc. datasets are prioritized, and it looks at vulnerability from sea level rise and storm surge. EPA requires public utilities to complete a self-assessment (VSAT) every 5 years, next is 2021.
- City of Brunswick Engineering & Admin: Infrastructure related, understanding where the vulnerable areas are and how to be better prepared. CRS benefit is a bonus. They can get a list of flooding areas, and they are currently working on mitigation projects (working with program for College Park and property acquisition).
- DNR-CRD: Here to support the project. They facilitate projects through the permitting process, so they can share knowledge from other coastal clients/projects.
- Glynn County Admin: The county has a lot of land impacted land by flooding, shoreline erosion, tides, and sea level rise. They are looking to protect County assets (infrastructure) and develop a more thorough and comprehensive understanding of issues county-wide.
- Glynn County Admin: Understands importance of using this data to help with future planning. Grandchildren have the potential to experience the next century and actually be impacted by current sea level rise projections. Wants a plan that can be used to leverage grant funding to implement projects.
- Glynn County Admin. Disseminate information.
- Glynn County Community Development: This was a major element of the County's Comprehensive Plan workplan. It is good for budgeting for capital projects and updating codes to help mitigate near shorelines.
- Glynn County EMA: The coast of Glynn is one of the biggest natural resources and it should be protected. Looking for ways to mitigate the impacts of storms and avoid property loss.
- Glynn County Engineering: Used as first step to having an ongoing management plan. It will help to guide the CIPs that are far off but important.
- Glynn County GIS: Role is to provide information to support the process. Surveying beaches on SSI since 2008 and they have beach profiles. Jekyll beach surveys since 2014. They also have post-hurricane data on high water marks and king tide data. Most of the data is county-wide.
- Glynn County Public Works: Wants to make sure feasibility and common sense is taken into consideration when making recommendations. There are a few choke points, but they are not currently mapped. At one time the County had a list developed by staff, but maintenance now is so routine that it has not been updated. Can provide a list of known flooding areas.

- Jekyll Island Authority: Want to be good partners in the process and willing to help and share information as needed. They have a lot of data that could be useful (Beach Management Plan and a revetment that is under construction). They have water and sewer that is independent of BGJWSC, and they have identified vulnerable infrastructure feature types for a similar study from the DRRP.

III. Discussion of Online Survey/Community Engagement Process

- Public Outreach
    - Survey – give people the opportunity to provide feedback on erosion areas, flooding hotspots, king tides, etc.
        - Group decided to hold off on survey. Might be value in having survey after assessing all the existing data to see if there are gaps that could be filled with feedback.
    - Plan for booth at CoastFest to educate the public through photos and data (presentation of facts).
    - Setup website for the project, similar to Revetment Project Website to act as a clearinghouse for information https://glynncounty.org/1989/Revetment-Project
        - Highlight that this project is looking at areas with shoreline vulnerability and king tide flooding.

IV. Plans for Next Meeting(s) & Data/Information Sharing

- Next Meeting: early November
- GMC or Glynn County will reach out regarding data requests, but if you have anything pertinent to share, please email Rob Brown at rob.brown@gmcnetwork.com

"Shoreline Protection Implementation Plan"

Coastal Incentive Grant (DNR-CRD / NOAA)

Shoreline Task Force Meeting

January 6, 2020, 10:00 -12:00

Glynn County Pate Building, 2nd Floor

Meeting Notes

I. Update on Recent Project Activities – Presentation

- *PowerPoint Slides attached as "**ShorelineTaskForceMtg_200106-PPT.pdf**"*
- Reviewed progress since previous meeting. General data gathering efforts include:
    - Various GIS Datasets were gathered from County, JIA, City, BGJWSC, and CRD.
        - NOAA Sea Level Rise, Flood Zones, Shoreline Change, SLAMM, Critical Facilities (Structures, Buildings, Lift Stations, etc), and Beach Profiles.
    - Identification of Coastal Erosion, King Tide Flooding, and Sea Level Rise Vulnerabilities
        - A total of 69 projects and issues were identified through field visits and meetings with City, County, and JIA Staff (58 were specific projects and 11 were general projects/problem areas).
        - Spatially, 24 were on St. Simons, 21 on Jekyll Island, 13 in City of Brunswick, and 11 in Mainland Unincorporated Glynn County.
        - 27 locations with King Tide Flooding and Coastal Erosion were identified by the general public at the County's Coastfest Booth on October 5th. Most were confirmed with local staff.

II. Task Force "Stations"

Detailed notes from each station are on Pages 3-11, brief summary of highlights is listed below.

1. Hot Spots and Vulnerable Areas
    - There was a request to define "Hot Spot" in the report
    - Nine additional locations were identified as having flooding or erosion concerns, and another 4 locations identified as important areas to protect.
    - Locations with only input from the public at Coastfest were reviewed. One was confirmed (Bell Pointe), and one location was removed for erosion

(Gould's Inlet). Gould's Inlet is experiencing accretion and not erosion, likely listed because it is a very dynamic system. The addition of sand has actually made this area now a critical habitat for birds.

2. Background Data (GIS Datasets)
    - There were additional datasets suggested to include: damage layer, repetitive loss areas, vulnerable populations, cultural/historical areas
    - Cost and feasibility to implement were important factors when prioritizing areas.
    - A few items to consider for prioritizing projects included higher levels when it has both flooding and erosion, and higher levels for ocean-facing than inland projects.
3. Management Practice Preference Survey
    - There was a general interest in natural practices.
    - There was interest in living shorelines, but these have permitting challenges.
    - There is cascading effects of a bulkhead in one area because then future development wants to use it. Education is needed.
    - There was discussion to mention nearshore shoaling and re-nourishment in this plan to allow for potential use later.
4. General Discussion: Partners/Funding Sources/Grant Opportunities/Permitting Issues
    - Glynn County has set aside some funding in the 2020 SPLOST List.
    - At least 12 funding sources/grants/foundations were identified.
    - Other federal partners include Army Corps of Engineers and FLETC.
    - Sea Island and King and Prince were listed as other partners because Sea Island already has a shoreline protection plan in place and anything we do to the shoreline will affect King and Prince.
    - Main issues with permitting were length of time and that natural structures were harder to permit than hardened ones.
    - For permitting, timelines are important. There were several recommendations to improve permitting process, including a pre-application meeting.

Station 1 – Hot Spots and Vulnerable Areas

General Comments

- Define "Hot Spot" in the report.
- St. Simons Causeway: GDOT is planning to do some mitigation during repaving project this spring (raising areas that are more prone to flooding); not sure of specifics
- The first phase of implementation of the County's Rock Revetment project is focused on public areas, including beach access points and Neptune Park.

Important Areas to Protect (not already on lists)

- Causeways: Jekyll Island & Sea Island (St. Simons & Riverside Drive already on lists)
- Airport: Jekyll Island (lowest airport in the County ~11 ft)
- Colonel's Island, where railyard meets, power to Jekyll Island can be cut off here.

Erosion Concerns

- Jekyll Island Causeway: concern due to vegetation removal from Georgia Power Project
- Jekyll Island, corner of Stable Rd and Riverview Dr, streambank lost ~10 ft in recent storms

Flooding Concerns

- Flooding off of the Spur at Venture Drive / Capital Square Drive (by LaQuinta) due to stormwater from this area not being allowed to flow into GDOT system
- There are low elevation houses on the west side of Hwy 17 & 4th Street (Dolphin/Trout/Bream/Pike/Bass).
- End of Crispen Blvd at old Plant McManus (during hurricanes)
- Stormwater backs up into the dorms at FLETC

Review of Projects ID'ed by the Public (Coastfest)

- General flooding concerns on Hwy 17
    - Location at Torras Causeway is already noted, but suggested to add at Lanier Plaza, by Chapel Crossing Road, and just south of Redwood Street (by JPs)
- Belle Point
    - Observed flooding at entrance on north end, at Belle Point Parkway
- Gould's Inlet
    - There is actually growth of sand (accretion) in this area. It might have been listed by the public because they see this as a very dynamic system. The additional sand has actually created critical habitat for plovers and birds, so the County's Rock Revetment project in this area has been pushed off to a Phase 2 because of the additional permitting requirements from the new habitat created.

Station 2 – Background Data (GIS)

General Comments:

- The focus on this phase (Year #1) should be on shoreline protection
- Erosion
    - Tends to be more of a short-term problem.
    - Very location specific
    - Easier to address
    - Less costly
- Flooding
    - Flood issues are more difficult to define
    - Has a more severe impact on a larger geographic area
    - Impacts more people
    - Not always related to natural systems. Flooding can be related to issues with infrastructure
    - Can be tidally influenced (might be subject to flooding at high tide, but not at low tide)
    - More costly to address

Datasets that are missing (these additional datasets should be used to assist with prioritizing projects)

- Roads and traffic flow.
- Using Census and parcel data to estimate the number of people impacted by a certain condition
- Using parcel building value data to determine property impacted. Conversely, this can also be used with Census data to identify vulnerable populations
- Add in Repetitive Loss Areas from County and Brunswick CRS programs
- Storm Damage Points layer from County GIS
- Use parcel ownership to identify Board of Education Sites for existing school parcels as well as future site considerations
- Lift Station service areas
- Site of historic and/or cultural significance
- High water marks

Consideration for prioritizing projects

- Higher priority for ocean-facing versus inland projects
- When reviewing critical facilities and infrastructure, need to consider alternatives. Can the infrastructure can be moved, are there alternatives that can address the issues, etc.?
- Higher priority for projects that result in the protection of community interests and/or features versus projects related to private property
- Higher ranking for projects that address both erosion and flooding
- Consider funding and cost as part of the prioritization process
- Consider the feasibility of implementation
- Consider long-term maintenance

Station 3 – Management Practices

Description	***Issues & Opportunities*** (Input from Shoreline Task Force)	***Photos***
1. Living Shorelines ***Scale***: shoreline ***Context***: coastal; rural to urban ***Description***: bioengineering combined with native vegetation; adjacent to estuarine waters. In Georgia, this typically includes oyster reef creation.	• Public acceptance and interest is high. • Allows natural connections between aquatic environment and adjacent upland; preserves tidal exchange; sediment conservation; allows for marsh migration. • Permitting challenges are significant. It is easier to permit bulkheads than living shorelines. • Currently construction is more expensive than bulkheads. • There is a need for high-profile demonstraiton projects that the public can access. • Projects can be complex.	 *Source: GADNR-CRD*
2. Bulkheads / Sea Wall ***Scale***: shoreline ***Context***: coastal; suburban to urban ***Description***: hard armoring of the shoreline. Can often be wood, concrete, or other hard building material. A wall is created at the upland/marsh interface and backfilled to raise upland.	• People feel safer, they want a static shoreline. • Hardened shorelines disrupt sediment movement and transport patterns. • Causes erosion on subject and neighboring properties. • Starts a “chain” effect where once one property has a bulkhead, neighboring properties want the same. • Contractors often recommend this solution – education is needed. • Use allowed adjacent to the marsh, i.e. pools and patios, ofter require a bulkhead and fill. • Are exempted in the Marshland Protection Act, which incentivizes this over other solutions.	

Description	*Issues & Opportunities* (Input from Shoreline Task Force)	*Photos*
3. Rock Revetments & Jetties ***Scale***: shoreline, beach ***Context***: coastal; suburban to urban ***Description***: hard armoring, expensive, designed to absorb wave energy and to reduce erosion. Can disrupt natural sediment transport.	• Two major rock revetments: Johnson Rocks and Jekyll Island. • County is proposing an expansion of the kneewall at Neptune Park from the Pier to the Lighthouse as part of SPLOST 2020. • Politically popular because the public can see the solution. • County is primarily interested in maintaining what they have, not building new ones. • Sea Island just installed a jetty at the bottom of the island which will have an impact on sand transport to St. Simons.	
4. Rip Rap ***Scale***: Shoreline, channels ***Context***: coastal and upland; rural to urban ***Description***: deploying smaller rocks of varying sizes to slow flow and stabilize eroding banks.	• Very common technique. • Allows for some natural vegetative growth. • Less expensive option • Used to stablize Blythe Island	
5. Temporary Beach Access (w/ Barrier) ***Scale***: shoreline ***Context***: coastal; suburban to urban ***Description***: mechanism to block flow of water through a low-lying beach access point. This involves local stockpiling of materials near the entrance that can be quickly mobilized for the creation of a temporary barrier when a storm or high tide is forecasted.	• Only requires a Letter of Permission (LOP) • For emergency flood mitigation during hurricane season. • This requires the availability of beach quality sand. • Public Works was supportive of this option.	 

Description	*Issues & Opportunities* (Input from Shoreline Task Force)	*Photos*
6. Constructed Dunes ***Scale***: shoreline ***Context***: coastal; suburban to urban ***Description***: restore dunes and block flow from low-lying beach access points, hardened structure beneath dunes.	• Temporary dunes (less than 6 months) require an LOP only. Permanent Dunes must have a SPA permit. • If you are going to go through the trouble of building, they should be permanent. • Proprietary company "Permashield" has contacted the County regarding their product for this purpose. • Pedestrian access can be allowed over the dune, and vehicle access can be too, if designed accordingly.	 
7. Sand / Dune Fencing ***Scale***: shoreline ***Context***: coastal; rural to urban ***Description***: fencing used to force windblown sand to accumulate in a desired place and build up the dune, also used to prevent foot traffic from damaging the dune system	• Has already ben successfully deployed in Glynn County. • Inexpensive and more natural way to build dunes, but the timeframe for a mature dune is much longer. • It is an effective way of keeping foot traffic out of the dunes. • It is politically popular as a measure.	
8. Beach Renourishment ***Scale***: shoreline ***Context***: coastal; suburban to urban ***Description***: process by which sand lost through erosion is replaced from other sources, typically a repetitive process because it does not remove the physical forces but mitigates their effects	• Glynn County attempted to permit a beach renourishment project in the 1990s, and it was met with a lot of resistence. • It is likely that this would still be publicly unpopular. The County could conduct a survey to gauge public acceptance. • Glynn County is missing out on an opporutnity to participate in the ACOE Sand Sharing project because no projects are identified. • There are eroding beaches on Jekyll and St. Simons Island.	 *Source: WTOC 11*

Description	*Issues & Opportunities* (Input from Shoreline Task Force)	*Photos*
9. Nearshore Placement ***Scale***: shoreline ***Context***: coastal; suburban to urban ***Description***: placement of sand near-shore, but not directly on the beach to buffer wave energy and to allow natural shoaling processes to deposit additional sand and build the beach.	• This option may have more public acceptance as it mimics natural processes. • There is interest in modeling this BMP to determine where it would be appropriate. • Has already been successful on Ft. Pulaski which is subject to erosion from shipping channel waves. • Was also used on Tybee Island as part of their Beach Management Plan.	
10. Land Preservation ***Scale***: landscape, watershed, community, shoreline ***Context***: coastal and upland; rural to urban ***Practices***: natural land and open space preservation, conservation easements, establishing parks and greenways	• This is popular but an expensive option. • The County should prioritize preservation of natural lands that will allow for marsh migration as sea levels rise. • The Nature Conservancy's SLAMM model data that identifies marsh migration potential could be used to identify areas the County can target for conservation. • Provides a lot of CRS credit.	
11. Green Stormwater Infrastructure ***Scale***: community, site ***Context***: coastal and upland; suburban to urban ***Practices***: bioretention, bioswales, rain gardens, permeable pavement, stormwater planters	• This is becoming a popular option. There are active projects already in the County, on Jekyll and in Brunswick. • Maintenance is challenging. • Public acceptance is high. • Promotes infiltration and water quality treatment, reduces impervious surfaces and stormwater runoff, provides ecological services.	

Description	***Issues & Opportunities*** (Input from Shoreline Task Force)	***Photos***
12. Streambank Stabilization ***Scale***: community, site ***Context***: coastal and upland; suburban to urban ***Practices***: Geo-textiles, staking, log structures, rip rap, stone structures.	• More pleasing "natural" look. • Can often use on-site materials. • Designed for habitat. • County is intereseted in this option. • Maintenance is an issue because private property owners often resist vegetation in ditches. There is the misconception that the vegetation slows flow, causes flooding and harbors snakes and mosquitos. • Education is needed. • Permitting may be an inssue where this is used to stablize natural channels. • Jekyll Island completed a project using Filtrexx (picture to right).	 
13. Policy Changes ***Scale***: community ***Context***: planning & development ***Practices***: Shoreline Protection Act, Permitting, Buffers	• Create buffers around land use • Address permitting difficulties with Living Shoreline and the inherent "incentive" the MPA exemption for bulkheads creates. Consider creation of a "Nationwide"- type permit for Living Shorelines. • Address conflicts between SPA jurisdictional line determination and the Glynn County Shoreline Protection ordinance. • Review uses allowed in the County Shoreline Protection buffer to see if they are appropriate.	

Station 4 – General Discussion

Additional funding sources/grants:

- Glynn County has set aside "some" funds for implementation in the 2020 SPLOST
- CDBG-DR; CDBG to entitled communities; CDBG to non-entitled communities
- 319(h) Grant through DNR-EPD (U.S. EPA)
- Coastal Incentive Grant through DNR-CRD (NOAA)
- Army Corps of Engineers might have some additional funds/grant opportunities
- National Fish and Wildlife Foundation
- Communities of Coastal Georgia Foundation
- FEMA Public Assistance after a storm
- FEMA BRICK Program, created to assist with resiliency (program is still underway with FEMA)
- NOAA funding to assist with resiliency
- Include the private sector to fund part of project(s)
- Creation of a Tax Allocation District (TAD) to fund part of the project
- National League of Cities

Other partners not at the table:

- Army Corps of Engineers
- FLETC – they might have additional funding sources available and if not, at least they should be involved in the conversations since they are heavily involved in re-entry and recovery processes
- Private organizations and/or businesses
- Pinova
- King and Prince Hotel – shoreline projects/activities will have a direct impact on them.
- Sea Island – They already have a shoreline protection plan in place; the intent is to have their plan reflect our goals and objectives.
- Tybee Island because they have been through some of these processes
- Invite members of heavily flooded neighborhoods or representatives from HOA's
- Conservation groups
- One Hundred Miles

Issues with permitting:

- It is easier to permit a project with hardened structures than natural structures (e.g., living shorelines).
    - Living shoreline permitting is by far more difficult than hardened permitting.
- Length of time for permitting
    - The internal process is too long
    - Federal permitting is long and tedious
    - DNR Committee's process is too long, and at times, it can hold up the process for a very long time.

- Other issues:
    - Shoreline Protection local Committee was mentioned as a primary issue.
    - Communication issues between multiple agencies (Army Corp, NOAA and DNR)
    - Timelines – having projects in a plan but not mapping out the timing of the permitting and making sure that if any "construction" is not scheduled during any nesting season or otherwise related.
- Comments from DNR permitting representative
    - Timing depends on the size of the project. Anything under 0.1 acre, the permit does not have to go to the DNR local Committee, whereas, anything above that, it will need to go to the committee and abide or follow whatever requirements or condition they impose.
    - Suggested to make note of the changes to the Marshland Protection Act that became effective January 1, 2020.

Recommendations:

- Expand the state's permitting process and not rely so much on the Committee
- Setup a pre-application permitting meeting with DNR. This will allow for timely feedback from DNR staff and possible suggestions to ease the process
- Early in the process, list all projects with related timelines. During the creation of this list, make sure to include all permitting requirements, agencies and time restrictions.
- Map out potential supplies and vendors with a related timeline (from making the order, receiving the supplies, to paying out the vendors, etc.).

"Shoreline Protection Implementation Plan"

Coastal Incentive Grant (DNR-CRD / NOAA)

Shoreline Task Force Meeting

February 28, 2020, 10:00 AM

Glynn County Pate Building, 2nd Floor (1725 Reynolds Street, Brunswick)

Meeting Summary

I. Matrix to Rank/Prioritize Individual Projects

- There was a question regarding the use of CJ's data to look at erosion rates since it predates the two hurricanes. GMC address this issue by visiting all identified projects in the field with staff to visually confirm the presence of erosion.
- There was concern regarding the use of coastal marshlands in the sensitive habitat criteria because it is likely that most erosion is happening in marsh areas since they boarder the water. GMC will remove coastal marshlands from this ranking criteria and just use turtle/piping plover habitat and freshwater wetlands from the NWI database. There was a request that GMC also use maritime forest as a vulnerable habitat. If a participating project partner can provide that data in GIS format, then that will be included too.

II. Presentation of Matrix on Countywide-Scale using GIS to identify vulnerable shoreline segments.

- There was a question regarding Sea Island's participation in this project, and Glynn County provided Sea Island's Beach Management Plan to GMC staff.

III. Example Beach Profile Data

- GMC presented the Glynn County beach profiles that have been analyzed, and also showed an example from Folly Beach, SC.
- GMC made recommendation for ways that Glynn County GIS, if the resources are available to them, could make data collection and analysis of the beach profiles easier in the future.

IV. Discussion of Next Steps

- Report: "Shoreline Assessment and Implementation Resiliency Plan" will be completed in draft by the 3/30/20 deadline, but the final version must be completed by April 15, 2020. A draft of this plan will also be provided for review to the partners for their review and edits, prior to being finalized.

- Joint Presentation (City, County, JIA), March 17th
    - Important items to communicate include:
        - No action will be taken at this meeting
        - It is a working plan and a working project list, so it will be amended and edited in the future.
        - All projects are included, even those that are not priorities so that if funding does become available at some point in the future, that project will be eligible.
        - This presentation should focus on the background of the project and the process to get to where we are now.
        - Pam will introduce the plan and project, but Rob will create those slides for her. Rob & Courtney will then run through our process and answer questions.
    - Action items
        - Rob will meet with each partner to review the matrix and the projects that are included.
        - Rob will put a power point together and provide it to the partners for their review.
        - Rob will provide an updated project list to the County so it can be distributed to the elected and appointed officials prior to the meeting.
        - Rob will complete a draft of the plan prior to March 30, 2020 and provide it to the partners for their review.

"Shoreline Protection Implementation Plan"

Coastal Incentive Grant (DNR-CRD / NOAA)

Shoreline Task Force Meeting

August 28, 2020, 10:00-10:30 AM

via video through Microsoft Teams (19 individuals present)

MEETING NOTES

I. *General grant administration housekeeping (e.g., timesheets)*
   - Please send your timesheets with any time spent on this project to Monica Hardin (mhardin@glynncounty-ga.gov).

II. *Summary of general updates from comments on Draft Plan:*
   - Tables 4.2 to 4.5 – Project List
     - Sorted list from Near-Term to Long-Term
   - Sea Turtles
     - Updated end of Loggerhead Turtle nesting season to Oct 31st (previously listed as 15th and 31st)
     - Added more details on Georgia Sea Turtle Center and the practices and research on sea turtles on Jekyll Island
   - "Table 5.1: Water Access in Glynn County" – Ownership Questions/Updates
     - Changed column listing ownership to jurisdiction location since there were some ownership questions from data source
   - Jekyll Island
     - Updated details on original Johnson Rocks construction on Jekyll Island – continued into the 1970s.
     - *Will plan to update Jekyll Island Beach Access list and details when received*
   - Other
     - Added Executive Summary & Section 6 (Summary and Recommendations)
     - Updated proper naming conventions for St. Simons Island and Jekyll Island vs. JIA
     - Corrected a few grammatical items or missing words
     - In the "Introduction" section, it noted sea level rise was predicted to be 1 m by 2100, which is low end of spectrum. This was language from the original grant application. The reference to a specific depth was removed as the context is that future hurricanes with sea level rise will have greater impacts. The scenario to use will be a topic in the 2nd Phase of the project.
     - Section 5.1 – deleted sentence referencing boating safety zone as it only applies seasonally (reference to ordinance still noted in Section 5.4.2).
     - Updated date for Sea Island re-nourishment to summer 2020.
     - When describing that neither Jekyll Island nor St. Simons Island has ever undergone beach re-nourishment, changed this to "has never undergone engineered sand nourishment" because neither has even been nourished.

- Added a short description for South Atlantic Coastal Study in Section 5.7.
- Updated planned adoption date of Coastal Stormwater Supplement in City and County Stormwater Ordinances as December 2020 (per NPDES MS4 Permit requirement)

III. *Schedule/Timeline to complete Phase #1 of grant:*
- Sept 1st: Updated Draft sent to Task Force
- Sept 4th: Any remaining comments due
- Sept 8th: Final Draft will be sent to City/County/JIA
- Presentations to Councils/Commissions in September
  - Target is 15 minutes (*slightly shortened version from copy already reviewed for presentation planned for March 17th* – copies of these presentations will be sent for review the week of August 31st).
  - Scheduled Presentation Timeslots
    - Glynn County – Sept 15th 2PM (Work Session) & 17th 6PM (Commission Mtg)
    - City of Brunswick – Sept 16th, 6PM
      - City Manager sent GMC form to fill out for presentation
    - Jekyll Island Authority – next meeting is Sept 15th, but the agenda is getting full – will look to see if it can be added.
  - *Note: Grant period ends on September 30th, so match can only be counted for meetings/presentations held in September.*

IV. *Year #2 – Sea Level Rise Response & Implementation Plan:*
- Review Phase #2 Schedule
  - Each organization expressed that they would be comfortable meeting in person if we are following proper social distancing protocols. The space available at the Brunswick Library seems suitable for sufficient space and distancing.
  - Kickoff Meeting to be scheduled in early October – look out for Doodle Poll to select date
- Glynn County planning to accept the Plan from Year #1 (1st Phase) now, and adopt and update the DRRP after Year #2 (2nd Phase)
  - Jennifer recommended to Alec to update RSF-6 in the intermediate time, so that it can be included in the next DRRP update
- CRD has 1-m & 2-m Sea Level Rise scenarios and suggested GMC to reach out to access those data
- CRD also suggested to review BGJWSC's Climate Resilience Adaptation Report when looking at public facilities, as well as the DRRP RSF's #1, #5 & #6.
- Although outside of the grant period, the Georgia Climate Conference is April 28/29 at the Jekyll Convention Center, and Jennifer requested Kathryn to make a presentation if she is available.

Appendix E – Beach Management Resources

This section includes various beach management resources used in the Beach Management Plan for Tybee Island, and some of the guidance is specifically from Georgia DNR. The various sections of Appendix E are described below:

- E.1. Scrub-Shrub Trimming Guidelines for Areas Within Georgia Shore Protection Act Jurisdiction, pg 119-121

- E.2. Georgia DNR Guidance on Maintaining and Establishing Dune Paths, pg 122

- E.3. Georgia DNR Sand Fence Guidelines, pg 123-124

E.1. Scrub-Shrub Trimming Guidelines for Areas Within Georgia Shore Protection Act Jurisdiction

Source: Tybee Island Beach Management Plan, 2014

The goal of this proposal is to summarize data from numerous sources and to propose guidelines for granting Georgia Department of Natural Resources Shore Protection Act Permits for vegetation trimming or landscaping within State Shore Jurisdiction areas. Though derived from the known habitat needs of the Painted bunting (*Passerina ciris*), a species of concern in Georgia, these guidelines are intended to apply to all scrub-shrub habitats within Shore Protection Act jurisdiction. Successful management of habitat requires the protection of existing habitat. Breeding habitat loss is generally considered to be the greatest threat to the painted bunting species (Muehter 1998, Lowther et al. 1999). A major concern for Atlantic coast populations of painted buntings is the transformation of valuable wetland and scrub-shrub habitats into intensive residential development. This is especially well documented along the Atlantic coast. Current management practices can be modified or initiated to enhance the population of this declining species. The goal of this plan is to identify:

- Habitat Management Goals specific to each site
- Habitat Management Considerations to be identified for each site
- Planning Tools to be utilized in Habitat Management

Habitat Management Goals:

Along the coast, natural beach dunes and scrub-shrub and grassy habitat are maintained by storms, salt spray, and drought. In developed areas near coastal marshes, habitat should be maintained as naturally as possible, with special attention paid to the grass to shrub ratio found so that it emulated the same ratio found in naturally occurring open savannah-like forests. Mowed lawns are not conducive to the painted bunting, and in critical habitat areas, should be discouraged. Wetlands, even those less than ½ acres in size, should be protected as important feeding areas for nesting buntings and their young (Meyers 1999).

Active management may enhance nesting habitat. The maintenance of scrub-shrub grasslands in transition areas such as beach dune habitats is critical. Areas that are vegetated primarily with waxed myrtle (*Myrica cerifera*), rattan vine (*Berchemia scandens*) as well as native muhly grass (*Muhlenbergia filipes*) provide for painted bunting and other bird species nesting and feeding habitat. Painted buntings use some areas if grasses and scrub-shrub habitat are allowed to cover the area for four to five years and have successfully produced young in this habitat in coastal Georgia (Meyers 1999).

Habitat Management Considerations:

Known breeding habitat for the eastern populations of painted bunting must maintain early to mid-succession vegetation, with an emphasis on retaining a mix of open and wooded or shrubby

components. In the southeast, protecting beach scrub-shrub and coastal wetland habitats is important, not just for painted bunting habitat but for a wide variety of bird species known to utilize this habitat year-round and is best accomplished by being left alone (Sykes 2004).

Ideally, nesting habitat could be enhanced by using a template modeled after successful nesting habitat on other barrier islands such as Nanny Goat Beach, Sapelo Island. The template could be designed using aerial photographs of Nanny Goat Beach to roughly establish a ratio of grassland to scrub-shrub that is present in known nesting habitat. An overlay would create habitat that is approximately 50% grasses and 50% scrub-shrub.

On developed barrier islands, a dense shrub perimeter no less than 25' along adjacent property lines would be maintained to afford protection to the emergent grassland habitat within the proposed cutting area. The objective would be to incorporate view shed corridors for adjacent properties when identifying selected areas of *Myrica cerifera* to be removed. A proposal could include the selective removal of *Myrica cerifera* followed by monitoring for the natural succession of *Muhlenbergia filipes*, *Berchemia scandens* and *Sageretia minutiflora*. Additionally, the removal of known invasive species such as Chinese tallow (*Sapium sebiferum*) should be a mandatory component of any proposed vegetation plan.

Additionally, in an effort to enhance the value of the habitat, feral cats should be trapped in a humane manner and be permanently removed from the area.

Planning Tools:

Using aerial photographs and detailed surveys of specific locations, templates could be designed to emulate known nesting habitat while considering view shed corridors for adjacent property owners. The plan would emphasize cutting a pattern that simulated the heterogeneous clumps of shrubs as seen on Sapelo's Nannygoat beach. Long straight lines of shrubs would not be recommended, because predator search patterns focus on and easily follow this type of edge habitat. Clumps of heterogeneously spaced shrubs cannot be searched as easily by predators. A customized plan would identify specific stands of *Myrica cerifera* for removal through selective cutting and the minimal application of localized herbicide. Early March is the best time to maintain grassy areas. Mowing of grassy areas should be conducted no more frequently than every other year.

Bibliography and References:

Lanyon, S.M., and C.F. Thompson. 1986. Site fidelity and habitat quality as determinants of settlement pattern in male painted buntings. Condor 88:206-210.

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Available: http://cristel.nal.usda.gov. Nature Conservancy 2002, Species Management abstract for Painted Bunting; Online. Available: http://www.pwrc.usgs.gov/pabu/h/weknow.html.

Sauer, J.R., J.E. Hines, G. Gough, I. Thomas, And B.G. Peterjohn. 1997. The North American Breeding Bird Survey Results and Analysis. Version 96.3 Online. Patuxent Wildlife Research Center, Laurel, MD. Available: hhtp://www.mbr.nbs.gov/bbs/bbs.html.

Sykes, P.W., Jr., and J.M. Meyers. 1999. Annual survival in the southeastern coastal breeding population of the Painted Bunting (progress report). US Geological Survey, Biological Resources Division, Reston, VA. URL=http://cristel.nal.usda.gov.

E.2. Georgia DNR Guidance on Maintaining and Establishing Dune Paths

The Department of Natural Resources Coastal Resources Division may allow the use of a path through the state's jurisdiction under the Shore Protection Act. O.C.G.A. 12-5-230 et. Seq. The purpose of a path is to provide pedestrian access through the vegetated dune area of the dry sand beach in areas of low traffic where public access does not exist and the functionality of the dune system will not be degraded. The dune area is a fragile and important habitat for many birds and other wildlife. A path may be recommended instead of a crossover through areas with thick vegetative growth and presence of wildlife. The path should meander through the vegetation avoiding significant trees and habitat and allowing for the growth of a canopy over the path and is generally approvable if not greater than 3 feet wide and 7 feet high.

The Department requires that paths be maintained using hand tools only. No heavy equipment may be used. No vehicular access is authorized. The Department requires that staff be on site to flag the footprint of the path before maintenance begins.

No alterations of the location or dimensions of the path may be done without prior approval from the state. You must use all appropriate best management practices to protect the habitat and dune system. All debris must be removed from jurisdictional areas. Any incidental impacts associated with projects must be rectified by fully restoring areas to their preconstruction topographic and vegetative states. If sand is needed to restore the project site, it must be of beach quality obtained from an upland source rather than from the beach or dune system. You may be required to demonstrate proof of upland sand acquisition.

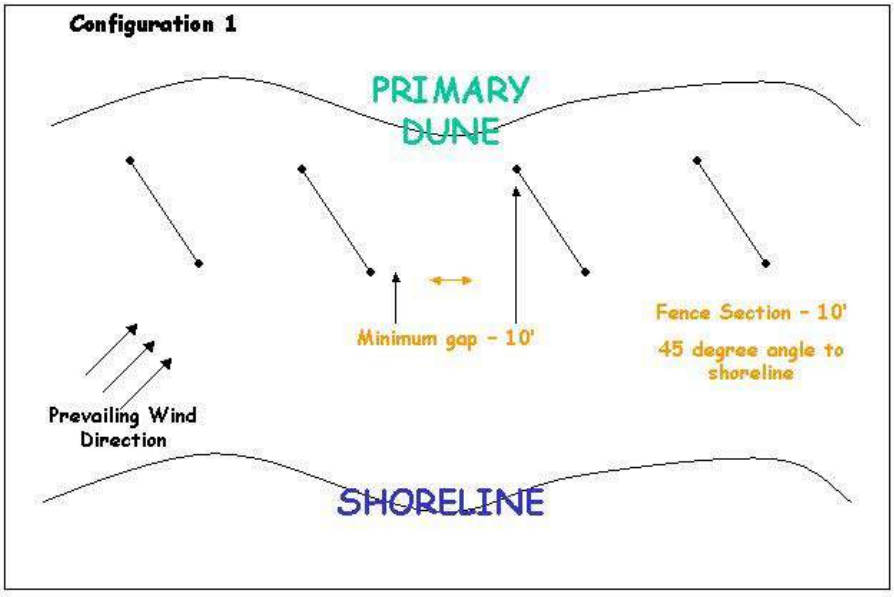
The Department must be notified prior to planning a dune path. Once staff has met on-site to assess the request, a Letter of Permission (LOP) may be issued outlining specifications. Each project must comply with all other Federal, State, and local statutes, ordinances and regulations.

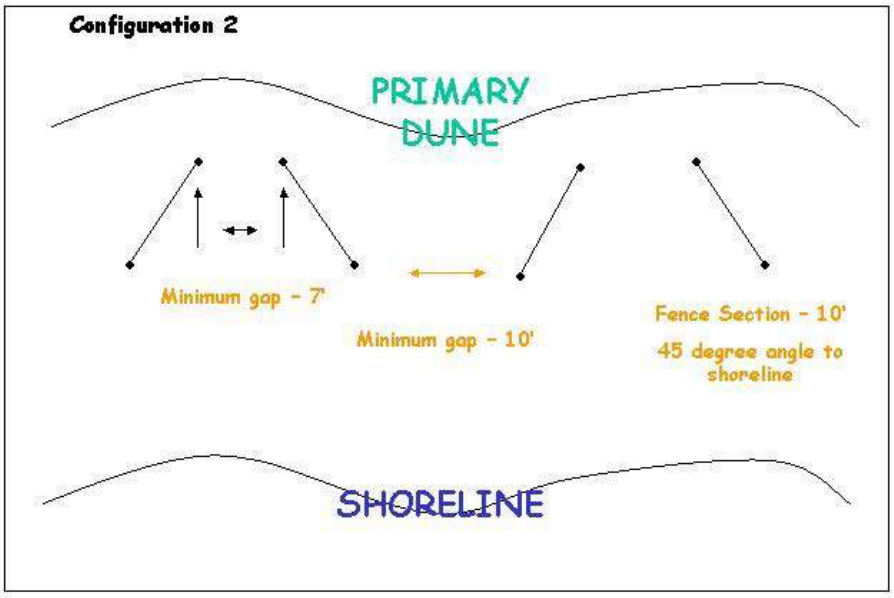
E.3. Georgia DNR Sand Fence Guidelines

Sand fencing is used extensively along the Atlantic Coast to build and stabilize dune fields and control human access to the beach. Unfortunately, some sand fence configurations have been shown to restrict or inhibit sea turtle nesting. The **Management Plan for the Protection of Nesting Loggerhead Sea Turtles and their Habitat in Georgia** (II, B, 2, C) stipulates that "fencing must be placed so as not to deter turtles' access to nesting areas, and arranged to prevent trapping nesting turtles". The following sand fence guidelines are designed to provide good dune building and stabilization performance, while minimizing impacts to sea turtles. Standard sand fencing consists of 4' wooden slats wired together with spaces between the slats. Woven fabric type fencing has also been successfully used in dune restoration projects. However, it is important that fabric fencing have a 40% to 60% open to closed space ratio to be effective. Fabric fencing is susceptible to ultraviolet degradation causing it to sag and lose its original shape. With sufficient maintenance, this problem may be avoided.

Guidelines for Sand Fence Placement:

1. Installation and repositioning of sand fences shall be conducted outside the marine turtle nesting season (May 1 – October 31) unless approved by the USFWS or GADNR Nongame-Endangered Wildlife Program.
2. Sand fence shall be installed in a temporary manner in accordance with the attached conceptual drawing. Configuration 1 consists of 10-foot sections of fence spaced at a minimum of 10 feet on a diagonal alignment to the shoreline (facing the prevailing wind). Configuration 2 consists of two 10-foot sections placed in an "open V" shape with the wider end facing the shoreline. Minimum space between ends of the "V" is 10 feet, and minimum width between the close ends of the "V" is 7 feet. For both configurations, the approximate angle of the fence to the shoreline is 45 degrees.
3. Sand Fence shall not be placed in the inter-tidal zone. Sand Fence must be placed above the highest spring high tide line, preferably adjacent to the primary dune.
4. Sand Fence shall not be placed within 7' of a beach scarp.
5. Sand Fence shall not be placed in front of an existing fence until the existing fence is completely buried.
6. Sand fences shall not be placed to control pedestrian traffic seaward of the secondary dunes. A post and rope fence may be used to restrict pedestrian access without impacting nesting marine turtles.
7. If fence material is damaged, debris must be removed from the beach area by the owner in an expeditious manner.


Configuration 1
PRIMARY DUNE
Minimum gap – 10'
Fence Section – 10'
45 degree angle to shoreline
Prevailing Wind Direction
SHORELINE


Configuration 2
PRIMARY DUNE
Minimum gap – 7'
Minimum gap – 10'
Fence Section – 10'
45 degree angle to shoreline
SHORELINE

Appendix F – Plans for "Johnson Rocks" Rehabilitation on St. Simons Island

This appendix contains two plan sheets for the "Johnson Rocks" rehabilitation project. The first page depicts the full design for all five phases. The second page presents the scope for Phase 1 only, which will be completed as part of the One Georgia grant.

Project Name: St. Simons Revetment Maintenance	Latitude: 31° 8'2.55"N
Waterbody: Atlantic Ocean	Longitude: 81°23'48.16"W
County: Glynn	Applicant: Glynn County
State: Georgia	Agent: Applied Technology & Management

PROJECT OVERVIEW

Revision:

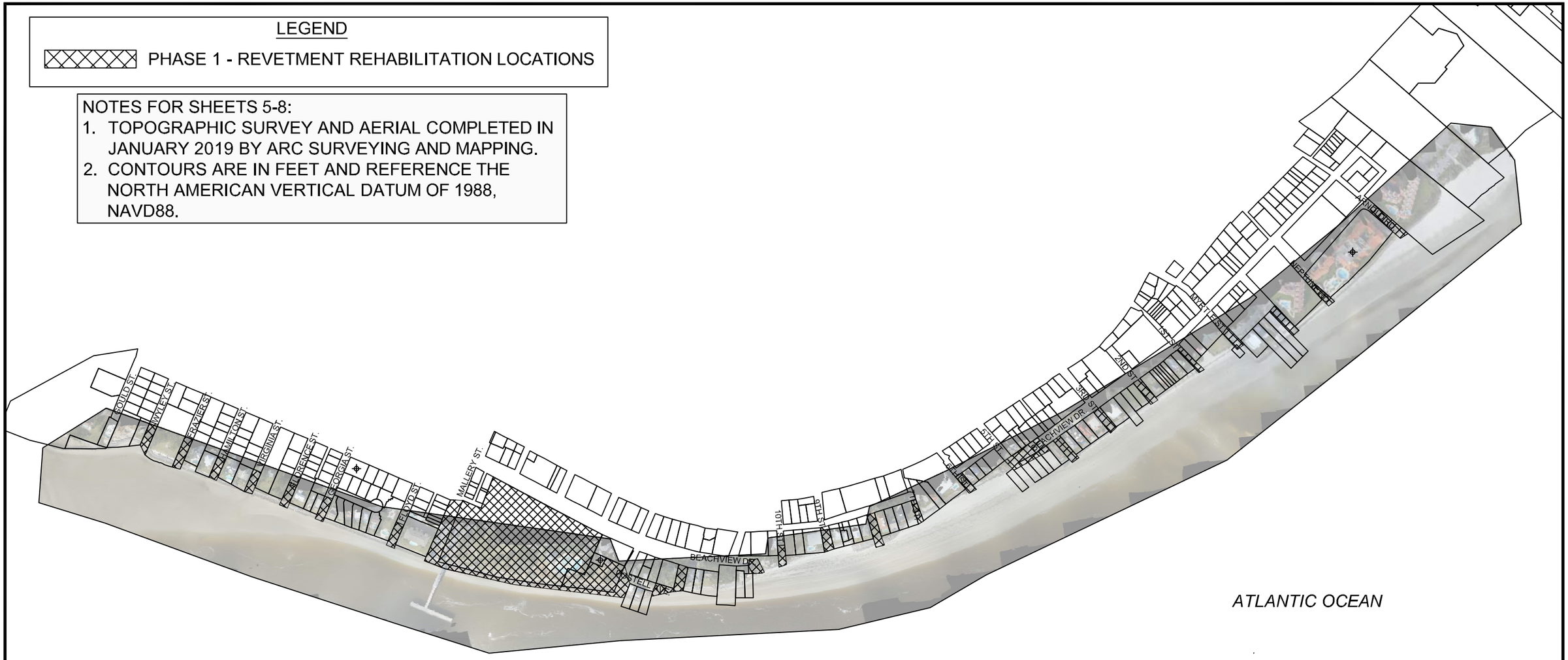
Date: April 1, 2019

ATM DESIGN ENGINEERING CONSULTING

LEGEND

PHASE 1 - REVETMENT REHABILITATION LOCATIONS

NOTES FOR SHEETS 5-8:
1. TOPOGRAPHIC SURVEY AND AERIAL COMPLETED IN JANUARY 2019 BY ARC SURVEYING AND MAPPING.
2. CONTOURS ARE IN FEET AND REFERENCE THE NORTH AMERICAN VERTICAL DATUM OF 1988, NAVD88.



PHASE 1

REVETMENT FRONTING PUBLIC PROPERTY ONLY
(~2,695 LINEAR FEET OF REVETMENT REHABILITATION,
~5,200 TONS OF ROCK REQUIRED)

N

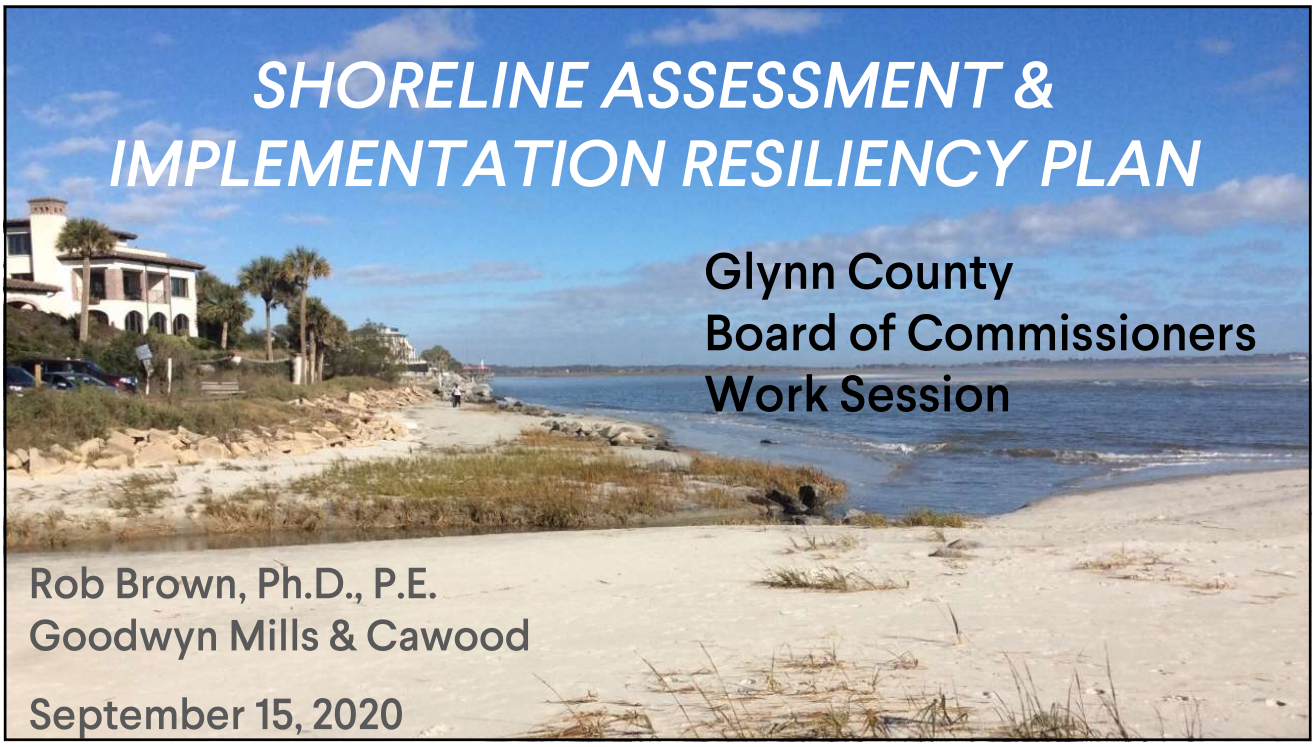
0 600

Scale in Feet

NWP3 DRAWING EXHIBITS

Project Name: St. Simons Revetment Maintenance	Latitude: 31° 8'2.55"N	PHASE 1 OVERVIEW	Revision:
Waterbody: Atlantic Ocean	Longitude: 81°23'48.16"W		
County: Glynn	Applicant: Glynn County		
State: Georgia	Agent: Applied Technology & Management		Date: April 1, 2019

ATM DESIGN ENGINEERING CONSULTING



SHORELINE ASSESSMENT & IMPLEMENTATION RESILIENCY PLAN

Glynn County
Board of Commissioners
Work Session

Rob Brown, Ph.D., P.E.
Goodwyn Mills & Cawood

September 15, 2020

ACKNOWLEDGEMENT

- *This report was prepared by Glynn County under grant award #NA18NOS4190146 to the Georgia Department of Natural Resources from the Office for Coastal Management, National Oceanic and Atmospheric Administration. The statements, findings, conclusions, and recommendations are those of the author(s) and do not necessarily reflect the views of DNR, OCM or NOAA.*

TIMELINE OF EVENTS: HISTORY

Hurricane Matthew

Hurricane Irma

2016 2017 2018 2019 2020 2021 2022

TIMELINE OF EVENTS: GRANT BACKGROUND

- Opportunity to submit a CIG to DNR-CRD to develop a Shoreline Protection Plan to address problem areas before the next major storm
- Shoreline Protection Plan aligns with County's 5-year Strategic Plan

Hurricane Matthew

Hurricane Irma

2016 2017 2018 2019 2020 2021 2022

Coastal Incentive Grant (CIG) Application Period

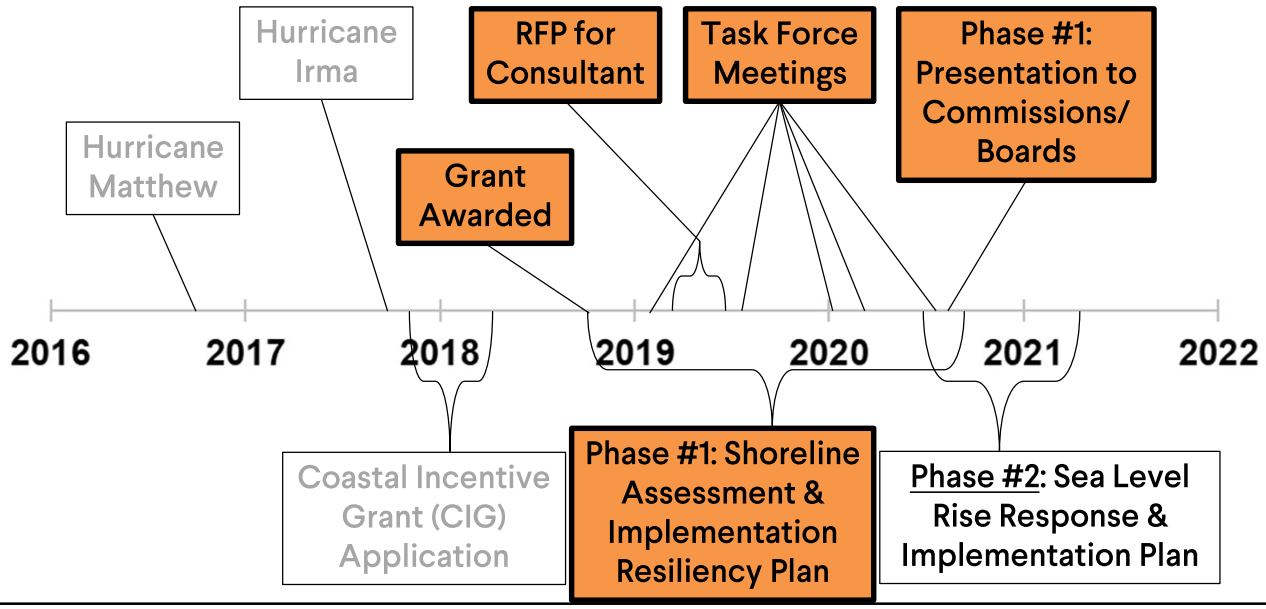
COASTAL INCENTIVE GRANT OVERVIEW

1. "Shoreline Assessment & Implementation Resiliency Plan"
   - –Objectives:
     - Gather shoreline related data (beaches, marshes, and rivers)
     - Evaluate exposed shoreline to determine vulnerability
     - Explore preventative measures and remediation solutions
       - –Emphasis on minimal armoring, but to include beach sand control alternatives
       - –Consider regulation of shoreline development; ordinance review
2. "Sea Level Rise Response and Implementation Plan"

PROJECT PARTNERS & TASK FORCE PARTICIPANTS

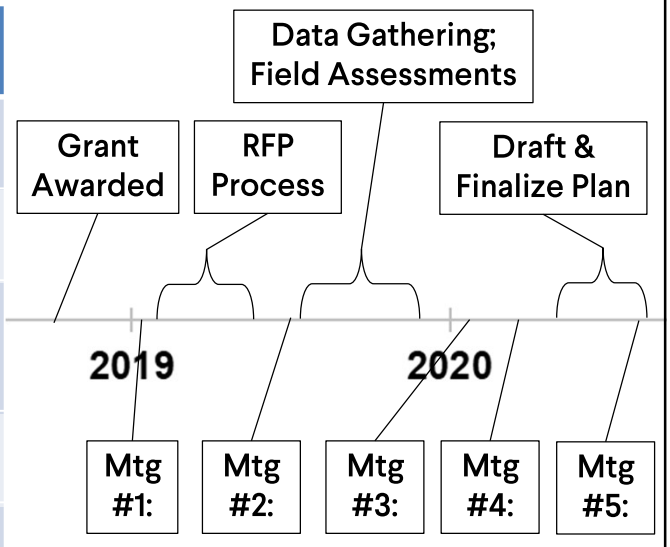
- Grantee:
  - Glynn County Georgia
- Project Partners:
  - City of Brunswick Incorporated February 22, 1856 Georgia
  - Jekyll Island Authority
- Other Task Force Members:
  - Brunswick-Glynn Joint Water & Sewer Commission
  - Georgia Department of Natural Resources Coastal Resources Division
- Consultant:
  - GMC Goodwyn Mills Cawood

TIMELINE OF EVENTS: PHASE #1



PHASE #1 TIMELINE: SHORELINE TASK FORCE (STF) MEETINGS

STF Mtg	Topics
1	History, background, presentation by Dr. C.J. Jackson, GA Southern
2	Project goals, community engagement; GMC coordination
3	Workshop: review vulnerable areas, background data, management practices, partners/funding/issues
4	Review matrix to rank & prioritize projects and problem areas
5	Review and discuss final comments from draft plan



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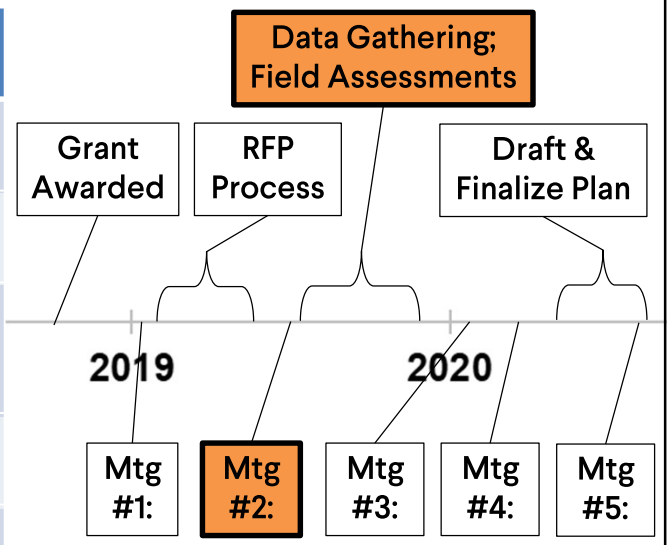
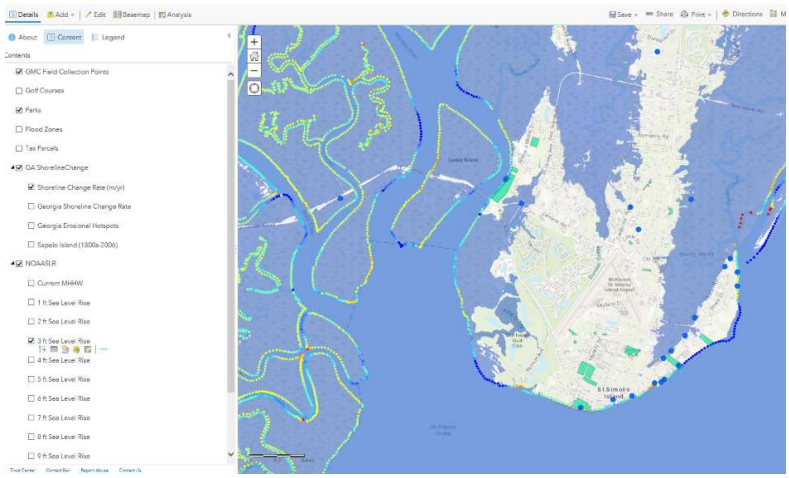


GIS DATASETS

- Data Sources: County, JIA, City, BGJWSC, CRD, GA Southern
- NOAA Sea Level Rise
- Flood Zones
- Shoreline Change
- SLAMM
- Critical Facilities
- Beach Profiles
- Potential Projects



COMMUNITY ENGAGEMENT: COASTFEST BOOTH (10/5/2019)

- Public Input for areas with
  - –Coastal Erosion
  - –King Tide Flooding
- 27 locations identified
  - –Many were confirmed with local staff

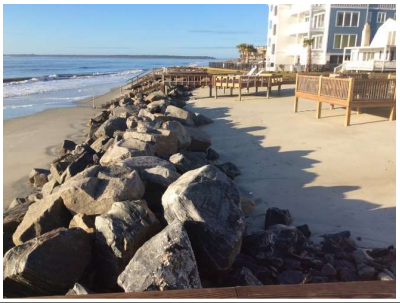
FIELD VISITS WITH LOCAL STAFF (JIA, CITY, & COUNTY)

- Field visits and meetings to identify:
  - –Coastal erosion
  - –King Tide / flood prone areas
  - –Vulnerable areas
- Information Collected
  - –Issue (flooding, erosion, both)
  - –Primary/Secondary Threat
  - –General description and detailed comments

FIELD VISITS WITH LOCAL STAFF
(Example Erosion Photos)








OTHER ACTIVITIES:
Environmental Academy Presentation (10/8/2019)

- House & Senate Natural Resources & Environment Committees
  - –Academy was facilitated by Carl Vinson Institute of Government
- Kathryn Downs & Rob Brown presented the project description, progress and planned activities
  - –Better informed for 2020 Legislative Session

House of Representatives
State Senate

LYNN R. SMITH
REPRESENTATIVE, DISTRICT 79
228 State Capitol
Atlanta, GA 30334
Phone: (404) 656.7149
E-MAIL: lynn.smith@house.ga.gov

TYLER HARPER
SENATOR, DISTRICT 7
301-B Coverdell Legislative Office Bldg
Atlanta, GA 30334
Phone: (404) 463.5263
E-MAIL: tyler.harper@senate.ga.gov

November 6, 2019

Rob Brown, Ph.D., P.E.
Senior Water Resources Engineer, Brunswick Office Manager
GMC
Via Email: rob.brown@gmcnetwork.com

Dear Dr. Brown (Rob):

On behalf of the House and Senate Natural Resources & Environment Committees, please accept our sincere appreciation for your contributions at the Environmental Academy held on the Georgia coast and facilitated by the Carl Vinson Institute of Government.

The information provided was very interesting and informative. We gained a lot of knowledge and are extremely grateful for all that you did to make this event such a huge success.

As we approach the upcoming 2020 Legislative Session, we are sure the NR&E Committees will be subjected to some of the issues that were addressed at the academy. Due to your efforts, we will be better equipped to make decisions.

If ever we can be of assistance to you, please do not hesitate to call our offices.

Sincerely,

Lynn Smith
Chairman Lynn Smith

Tyler Harper
Chairman Tyler Harper

DEVELOPMENT/ORDINANCE REVIEW: Coordination with County's Zoning Update

- Tunnel-Spangler & Associates (TSW) is conducting a zoning update for the County
- GMC coordinated with County and TSW on ordinances/zoning related to Shoreline Protection Act and Beach and Dune Protection District Ordinance

envision Glynn

PHASE #1 TIMELINE: SHORELINE TASK FORCE (STF) MEETINGS

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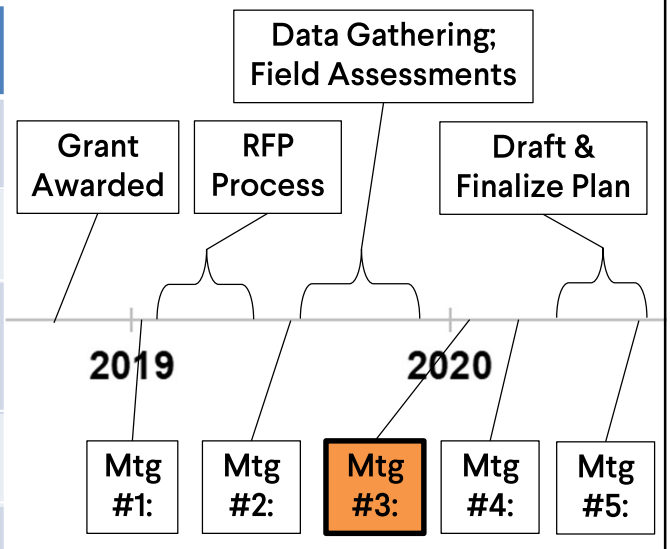
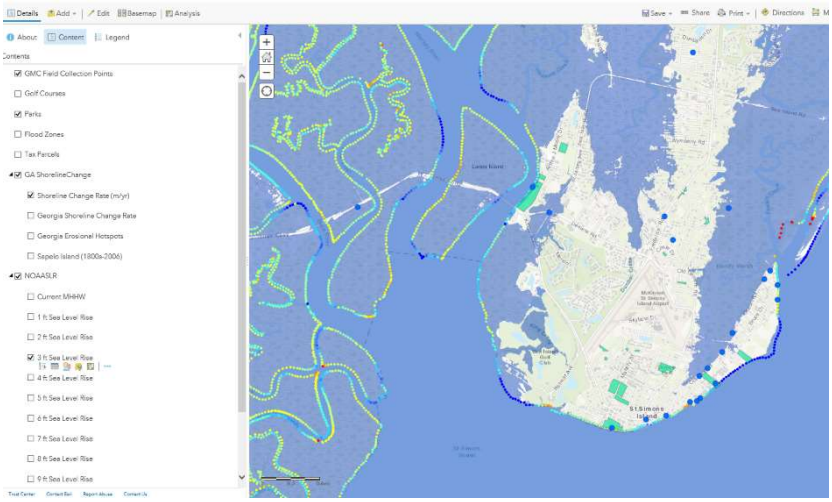


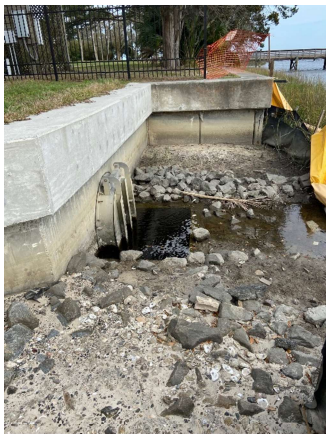
REVIEW LIST OF HOT SPOTS AND GIS DATASETS



MANAGEMENT PRACTICE PREFERENCE SURVEY: LIVING SHORELINES & CONSTRUCTED DUNES

SAND/DUNE FENCING, GREEN INFRASTRUCTURE, BULKHEADS/SEA WALLS, TIDE CONTROL, RIP RAP





OTHER MANAGEMENT PRACTICES

- Policy Change
- Land Preservation
- Temporary Barrier
- Elevate Houses / Buy Outs
- Elevate / Relocate Roads
- Nearshore Placement / Renourishment
- Modeling
  - –Nearshore processes
  - –Stormwater H&H

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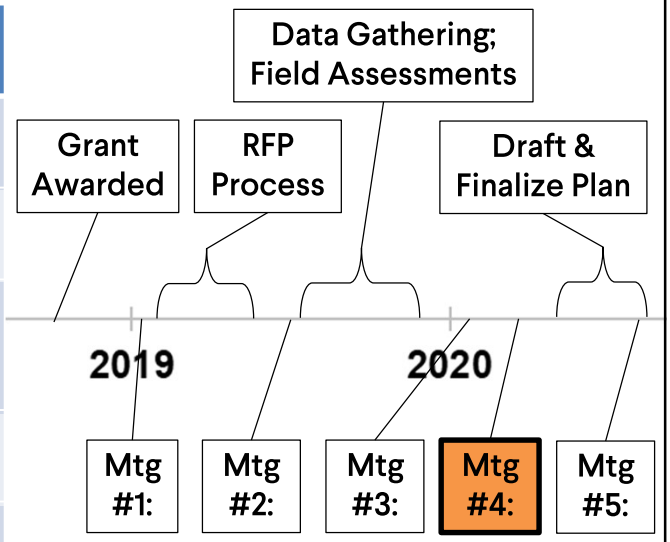


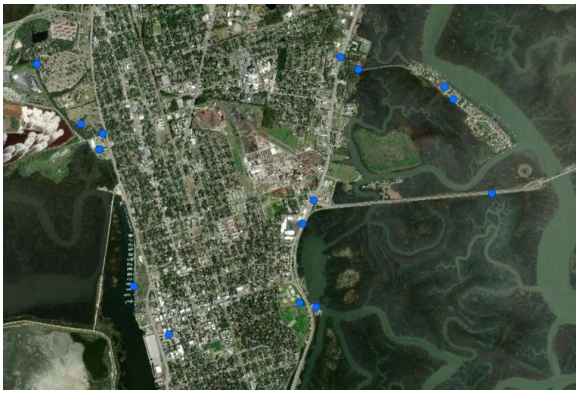
INTRODUCTION TO THE MATRIX

- 10 Factors
- Factors and weighting based on previous meetings
- Used for prioritization
- Additional Output:
  - –Cost (relative; $ to $$$$)
  - –Proposed Solutions & Alternates
  - –Potential Partners / Project Leads
    - Tied to funding opportunities and ownership

New ID	Shoreline Change	Infra-structure	Infrast Prox	Vulner Pop	Ownership	Habitat/ Veg	SLR	Flood Zone	Frequent flooding	Erosion	Total Score	Rank
Glynn -	Multipier	Score	Score	Score	Score	Score	Score	Score	Score	Score		
GM1	7	7	0	0	0	3	5	3	3	0	147	29
GM2	7	10	0	0	2	3	3	3	3	0	168	27
GM3	7	1	7	0	2	5	0	3	3	5	182	23
GM4	7	7	5	0	2	5	1	3	3	1	189	21
GM5	7	3	10	0	5	5	3	5	3	1	245	6
GM6	7	7	1	0	0	0	1	1	5	1	112	34
GM7	7	7	3	0	5	3	5	3	3	0	203	18
GM8	7	7	1	0	0	3	1	3	5	0	140	30
GM9	7	7	10	0	5	3	1	0	5	0	217	15
GM10	7	7	0	0	5	3	1	1	5	0	154	28

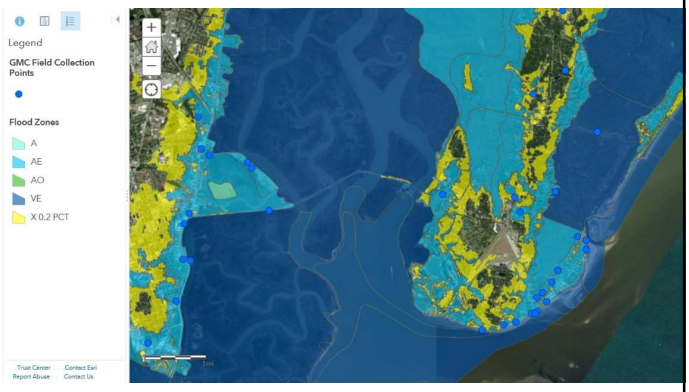
FACTORS

1. Projects ID'ed & vetted by staff
2. Type of Infrastructure (10)
3. Proximity to Infrastructure (10)
4. Sea Level Rise (10)
   - –Shorelines shift from rising sea level and not just erosion



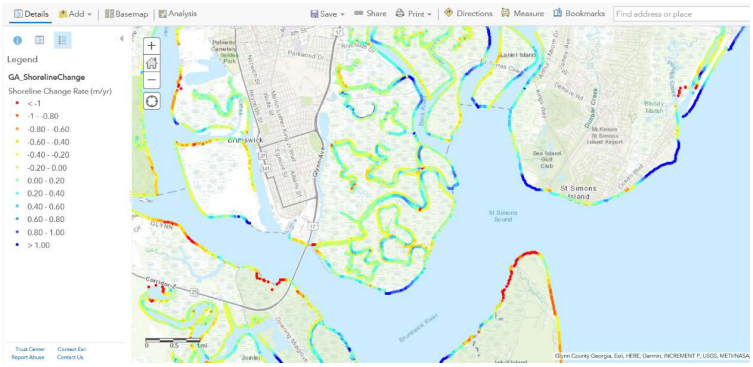
FACTORS

5. Vulnerable Populations (5)
   - –HUD Exchange
   - –Eligibility for CDBG funding
6. Ownership of Parcel (5)
   - –Ease of Construction
7. Special Habitat (5)
8. Flood Zone (5)
9. Previous Flooding Area (5)
   - –Hurricane damage or more frequently

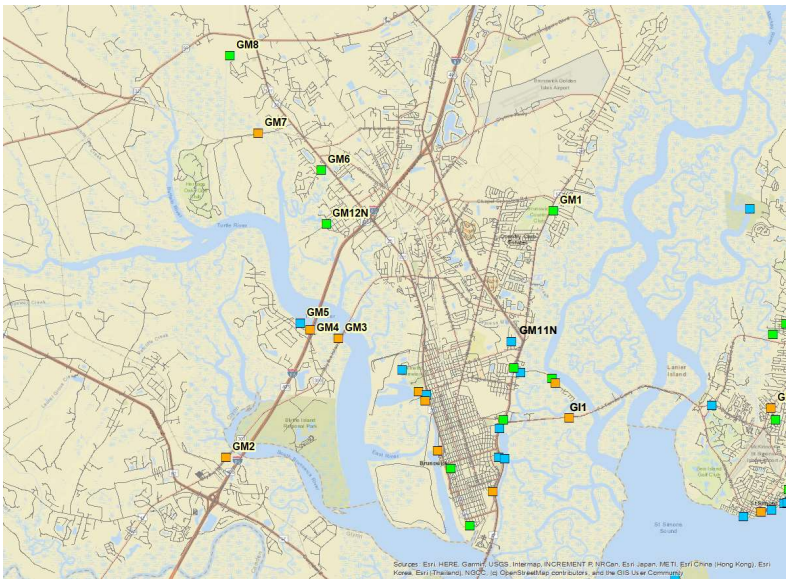


FACTORS

10. Presence of Erosion & Rate (7)
   - –Provide more weight if subject to both erosion and flooding
   - –GA Southern Data or Visual Assessment



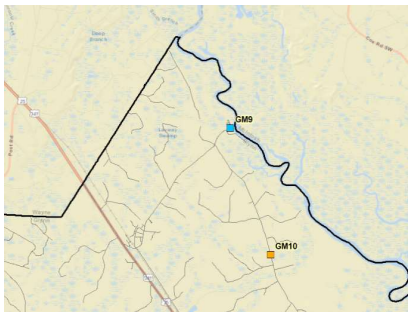
PROJECT LIST: MAINLAND GLYNN COUNTY



Community Identified Hotspots

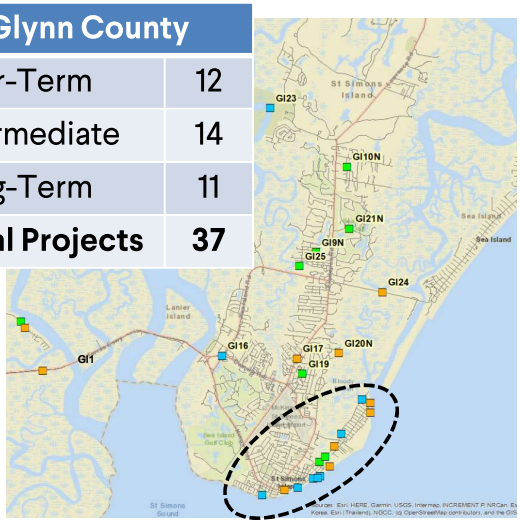
Priority

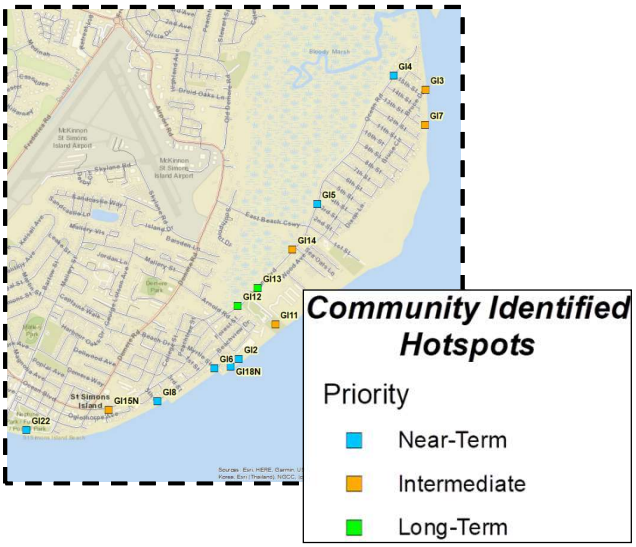
- Near-Term
- Intermediate
- Long-Term



PROJECT LIST: ST. SIMONS ISLAND

Glynn County	
Near-Term	12
Intermediate	14
Long-Term	11
Total Projects	**37**





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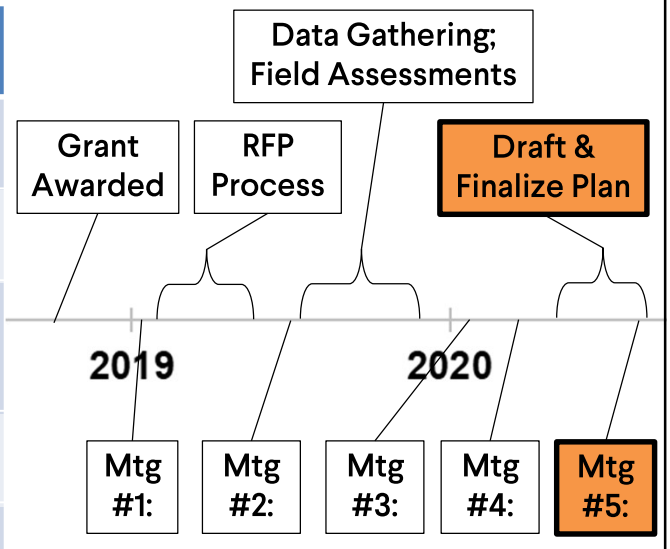

COASTAL INCENTIVE GRANT: PHASE #2

- "*Sea Level Rise Response and Implementation Plan*"
- Objectives:
  - –Examine data on SLR and its related intermediate and long-term hazards
  - –Analyze recent sea level rise changes
  - –Critical facility inventory and relocation plan
  - –Incorporate short-term & long-term goals and objectives from DRRP
- Timeline: Aug. 2020 – March 2021