

Appendix E: Restoration Status of Swan Island April 2019

Objective	Action	Needs
<p>Deepen federal navigation channel between Swan and Smith Islands to enable safe navigation for fishing boats and Smith Island residents who rely on boats to get to mainland</p>	<ul style="list-style-type: none"> • Dredging of Smith Island federal channel completed April 12, 2019 	<ul style="list-style-type: none"> • Monitoring and maintenance plan for channel • Expectation that dredging will need to be repeated in 10 years
<p>Beneficially used 61,000 cubic yards of dredged sediment to restore the footprint of Swan Island, create dunes and high and low intertidal marsh</p>	<ul style="list-style-type: none"> • Pre-construction consultation conducted with F&WS to determine restoration needs for each part of the island: (high marsh, low marsh, dunes, protect Heron rookery). • Island surveyed; elevations marked to establish benchmarks • Took pre-construction sediment/vegetation samples to assess baseline conditions, and determine the optimal growth elevation for <i>Spartina alterniflora</i>. • Developed metrics for successful restoration of marshes, dunes to create optimal conditions; help predict resilience to long-range rise in sea level • Placement, grading of dredged material completed May 2019 • Planting of 200,000 plugs of various species of site-appropriate plants (eg; low/high marsh plants; switch grass in dunes, etc.) to be completed in July 2019. 	<ul style="list-style-type: none"> • Determine accretion benchmarks • Monitor for 3 years post-construction to evaluate and compare: <ul style="list-style-type: none"> • elevation • shoreline erosion • vegetative success • SAV abundance and distribution • sediment characteristics • fish access using habitat complexity, inundation as a proxy. • oyster population <ul style="list-style-type: none"> • Need for funds to develop a plan for long-term monitoring. Funds secured for up to three years only. • Funds/strategy for communicating with Island residents, funding agencies about the restoration
<p>Improve/Maintain habitat value of intertidal areas for fish</p>	<ol style="list-style-type: none"> 1. Part of the unvegetated subtidal bight will be converted to low intertidal marsh. This represents a balance between increasing resilience of the island to SLR (by adding elevation) and maintaining access for fish.. 	<ul style="list-style-type: none"> • Re-evaluate in 3 years to determine if habitat complexity and inundation are sufficient to support fish accessibility. • Other monitoring metrics to use: Species diversity, vegetation and inundation as a proxy for habitat value to fisheries species.

<p>Erosion/storm protection to increase resilience for the town of Ewell on nearby Smith Island</p>	<p>2. Three monitoring platforms installed around the Island to record, currents, sea levels, wave heights etc</p> <p>3. Construction of breakwater using concrete 'A-Jack' armor units for underwater support</p> <p>4. Planting of dunes and high and low marsh, and successful establishment of these vegetative communities will facilitate elevation gain (through sediment trapping and production of belowground biomass) in response to future SLR</p>	<p>5. Monitoring plan is in development (by partners) but initial funding was for design, construction (USACE Operations and Maintenance).</p> <p>(1) Hay bales placed on top of breakwall will eventually break down.</p> <p>(2) Dredging will likely have to be done again in 10 years – may revisit this then</p> <p>(3) Establish a mechanism to evaluate predicted outcomes</p>
<p>Monitor hydrodynamics</p>	<ul style="list-style-type: none"> • Three monitoring platforms installed around the Island to record, currents, sea levels, wave heights etc. 	<p>1) Ice storms, ice accumulation, extreme weather events may affect monitoring stations</p>
<p>Monitor oyster colonies</p>	<ul style="list-style-type: none"> • Pre-reconstruction survey found an intact oyster population around the Island with multi-year classes (generations) of oysters. • No oysters were found in the channel 	<p>2) Re-assess oyster population in 3 years</p>
<p>Funding for monitoring, future restoration, impact of climate change (sea level rise; ice storms)</p>	<p>3) Funding secured for up to three years for hydrodynamic, ecological and topographic monitoring</p>	<p>4) Develop communications and outreach strategy as part of the monitoring and adaptive management plan</p>