

An aerial photograph of a beach. On the left side, there is a rocky area with many grey and blue stones. The rest of the image shows a sandy beach with waves crashing onto the shore, creating white foam. The water is a light greenish-blue color.

Shoreline Status

Fripp Island - Shoreline Committee

January 24, 2022

Shoreline Status

A visual look at both sides of the Fripp Island bridge abutment and the salt marsh.

Fripp Island - Shoreline Committee
January 24, 2022

An aerial photograph of a beach. On the left side, there is a rocky shoreline made of many small, light-colored stones. The rest of the image shows a sandy beach with gentle waves washing onto the shore, creating white foam. The water is a light, pale greenish-blue color.

THE BRIDGE AREA

The shoreline on *right* side of the Fripp bridge.
(Springtide side for purposes of clarification)



This aerial photo, taken during a king tide event on **July 13, 2018**, shows the large amount of vegetation still visible in the area around to the bridge approach in spite of the flood-like conditions.



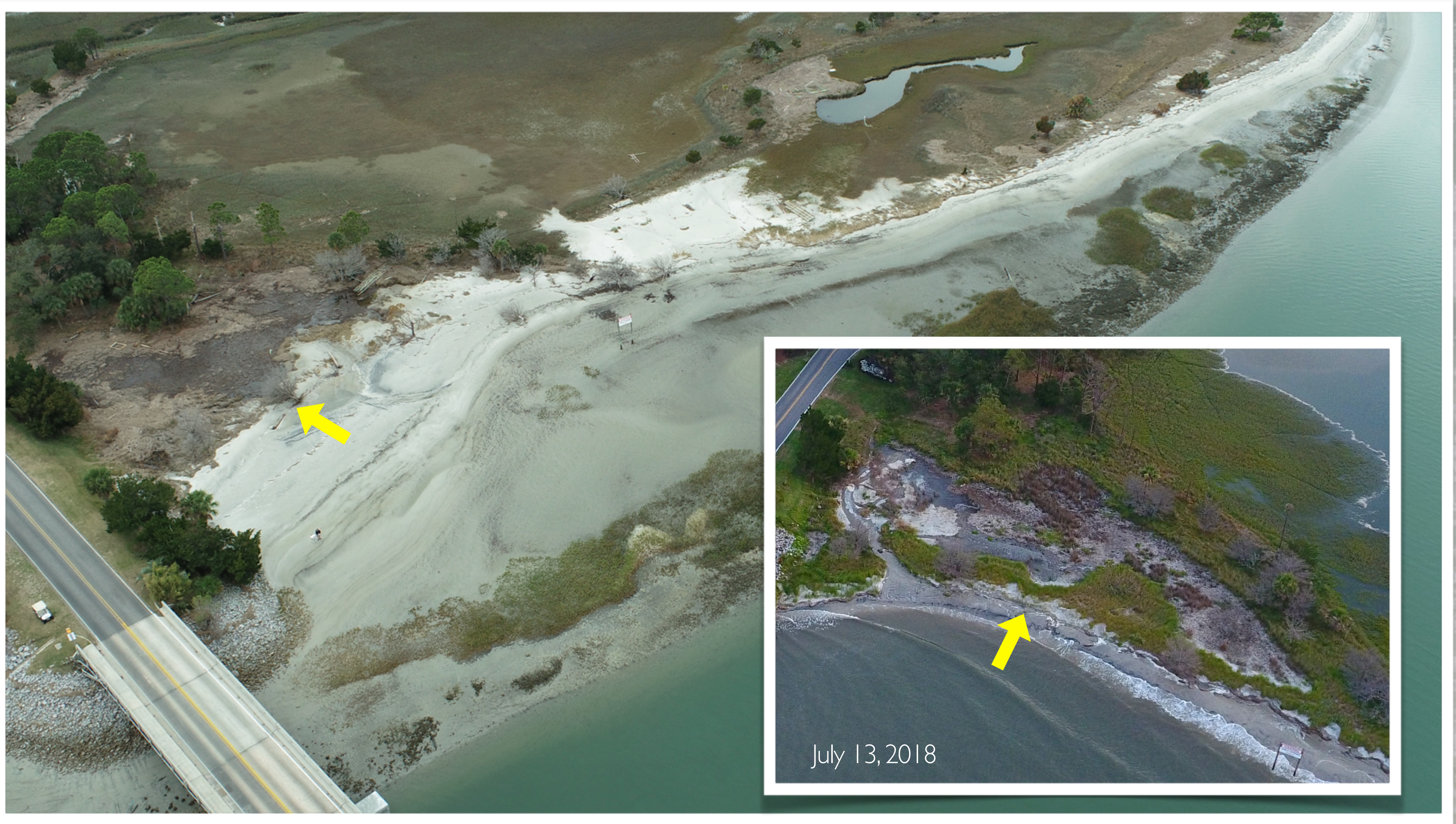
This photo, taken during a king tide event on **September 22, 2020**, shows a break in the vegetation boundary where sea water broke through from the inlet into the flooded salt marsh area.



This aerial photo montage, taken a year later, at low tide on **November 15, 2021** shows the breached area has not healed and remains filled with sand. The large arrow points to the main breach, the smaller arrows point to where expanding sand has begun to bury other nearby vegetation.



This photo, taken at low tide taken on **January 20, 2022**, shows the breached area has joined the existing eroded area next to it, creating a larger sand-only footprint that continues to expand along the bridge approach and throughout the whole area.



The same photo shows wrack is being pushed further and further towards Tarpon Boulevard indicating there is less vegetation available to slow the waves and halt the floating debris.

An aerial photograph of a beach. On the left side, there is a rocky shoreline composed of many light-colored, angular stones. To the right of the rocks is a sandy beach. Further to the right, the ocean waves are breaking, creating white foam. The water is a light blue-green color. The overall scene is captured from a high angle, looking down at the coastline.

THE BRIDGE AREA

The shoreline on *left* side of the Fripp bridge.
(River Club neighborhood side for purposes of clarification)



This aerial photo, taken during a king tide event on **July 13, 2018**, shows the grassy area in front of the homes remains for-the-most-part, dry and intact even during higher than normal flooding.



This photo, taken two years later on **September 17, 2020**, during a normal high tide, shows the eroded area has expanded along the front of the River Club homes and towards the bridge approach area.



This photo, taken at high tide on **January 23, 2022**, shows the eroded area has extended along almost the entire front of the homes in River Club and regularly floods the small land area near the bridge approach.



This photo, taken at an extreme low tide (during a king tide cycle) on **February 20, 2019**, shows several layers of underlying soil. The sea-facing hard edge of the layers indicates fresh erosion with each flood cycle, which can be seen in the next slide.



In this view, taken at low tide on **November 6, 2018**, the line of soil minus the vegetation is visible. Much of the vegetation had already been eroded away leaving only the soil footprint remaining. Left unprotected, the soil is quickly eroded by both wave action and the tidal flow that occurs in the inlet.



This photo taken three years later, on **January 23, 2022**, shows the extent of the erosion of the unprotected soil starting at Wardle's pier and moving past the River Club pier towards the front of the salt marsh. This area gets hit by both wave action and tidal currents.



This aerial photo, taken at high tide on **January 23, 2022**, shows the typical wave action that occurs against the shoreline. The winds were steady at the time, between 5-10mph with gusts around 15mph (flyable with the drone, but windy)

An aerial photograph of a salt marsh. On the left side, there is a rocky shoreline with many light-colored, angular rocks. The rest of the image shows a vast, flat, light-colored marsh area with some faint, winding patterns. On the right side, there are waves with white foam breaking onto the shore.

THE SALT MARSH

Aerial photographs of the changes occurring to the salt marsh located between River Club and Porpoise Drive.



This photo, taken on **April 29, 2018**, shows the salt marsh had already begun to erode. By using points of reference along the tidal creek, one can get a good idea of how far the erosion has spread. (See next slide)



This photo, taken on **January 20, 2022**, shows the mouth of the salt marsh as it stands today. Erosion has spread, but vegetation is trying to make a comeback. Slowing the wave action that negatively affects the marsh would greatly help any natural recovery.



This aerial photo, taken at low tide on **November 6, 2018**, shows the salt marsh area next to the Mollura residence on River Club Drive. Trees existed and were surrounded by a large grassy area that was spanned by the first leg of a 2-pier walkway.



Just three years later on **November 15, 2021**, the trees, the grassy area, and the walkway are long gone. A sea wall was added starting at River Club and extending along Cardinal Crest Lane. This has become a necessity to protect property owners against the sea in this area. The sea wall in this corner is all that stops the sea from reaching the homes and streets during storm events.



Figure 8. Shoreline Change

Note: Red line indicates projected shoreline in 2030

As shown on the information provided in Figure 8, between 2021 and 2030 the shoreline adjacent to the bridge and nook area is expected to change relatively little and significant shoreline erosion is expected between River Club and the PSD Revetment (Marsh Area). Correlating the information presented above with measurements obtained from satellite imagery, it appears that between 2021 and 2030 the shoreline has the potential to retreat between 100 and 200 ft adjacent to River Club and greater than 300 ft within the Marsh Area.

A page (8) from the McSweeney Inlet Shoreline Erosion Study shows the projected retreat of shoreline between 2021 and 2030 can be 300 feet or more in the marsh area (red line) and between 100-200 feet around the River Club area.

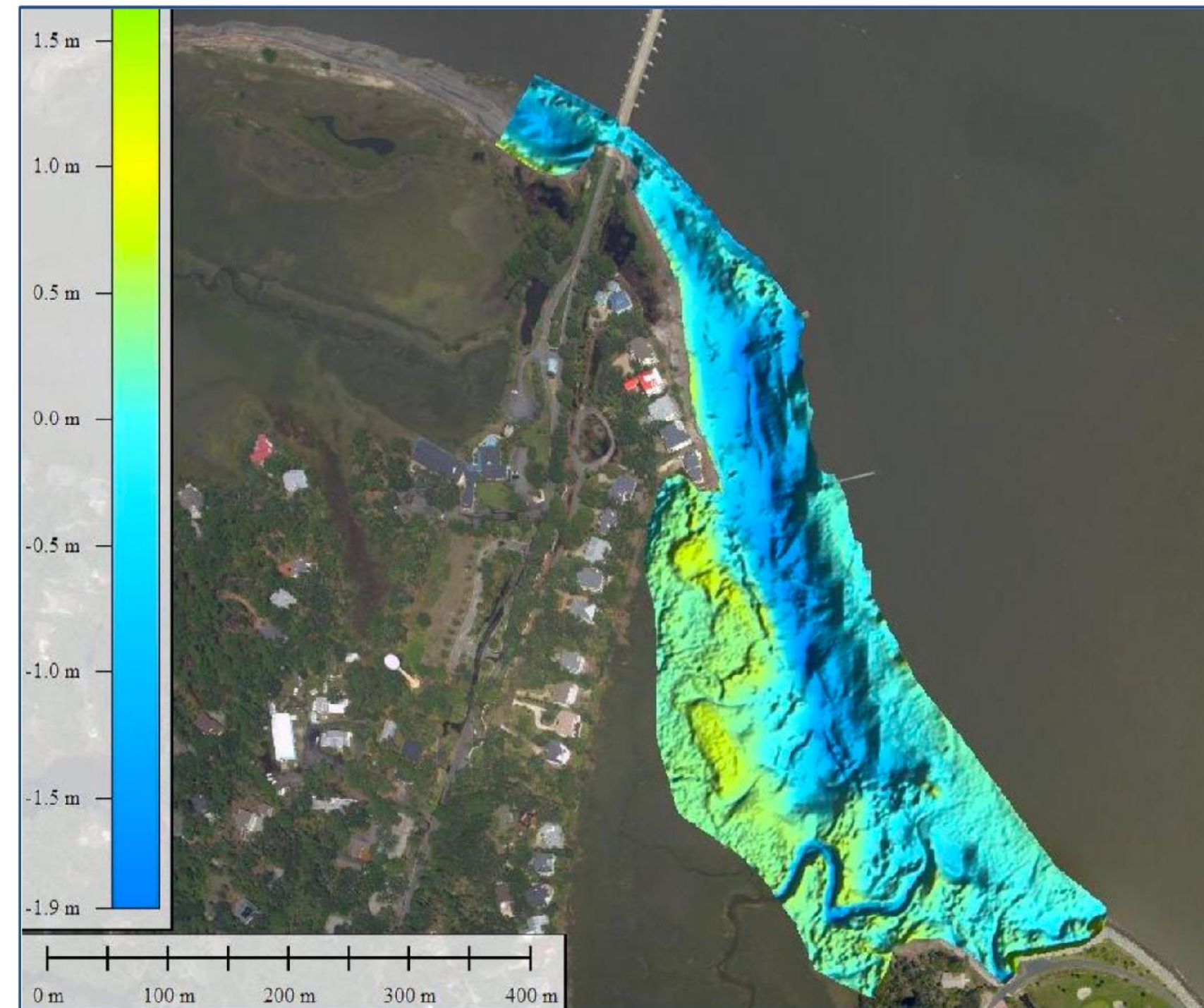


Figure 7. Volumetric Change

Figure 7 provides a relief map showing volume changes along the shoreline within the three study areas. Note the information shown does not depict elevations, rather changes in elevation. The data highlight that between 2010 and 2018 there has been a loss of 1 to 1.5 meters of elevation (erosion) in much of the area. In the marsh areas shoreward of the present shoreline there has been a gain in elevation (accretion) from washover (transport) of sediment from the previously existing beach ridge. This study further validates the change in shoreline and sand accretion of the marsh area as previously presented in Figure 5.

Another page (7) from the McSweeney Inlet Shoreline Erosion Study shows the loss of elevation (erosion) to the area between 2010 and 2018, as indicated by blue.

Also a temporary gain of elevation (yellow) from sediment being pushed further into the marsh area.



This aerial photo, taken at low tide taken on **January 21, 2022**, shows the eroded area is expanding rapidly and is now easily, two to three times the size of the entire property footprint of the Mollura residence.



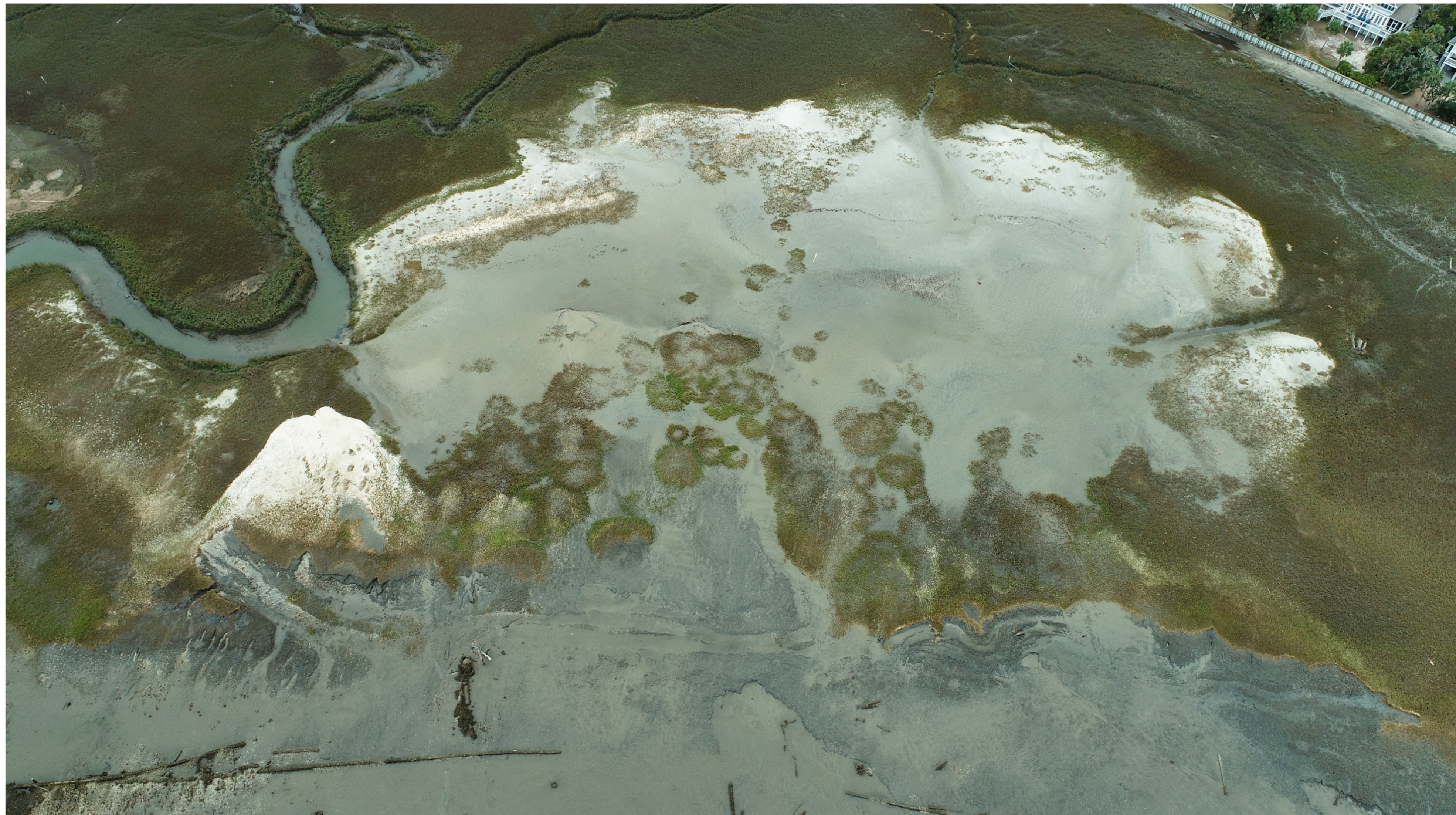
Another view of the eroded area, taken on **January 21, 2022**. The sea wall in this corner is the main barrier that prevents sea water from flooding the River Club neighborhood and Tarpon Boulevard during king tides or storm events.



Another view, taken on **January 21, 2022**, shows the sea wall extends down Cardinal Crest Lane, but does not go the full length of the marsh. Eventually it will have to if the marsh continues to deteriorate or any opening will become a weak link in the chain.



January 21, 2022 - An overall view of the salt marsh as it stands today showing the two main areas of erosion at the mouth of the salt marsh. As the southern tip of Hunting Island deteriorates, this area is more and more subject to the direct forces of the ocean.



An overhead view of eroded area at the center of the salt marsh. To get a scale of how big this area is, note the house in the upper right hand corner of the photograph. The bright white area at the lower left is a pile of oysters. I'm not sure why they were placed there, but if the purpose was for erosion and/or to encourage new oyster beds, the attempt does not appear successful.



January 21, 2022 - At the end of the salt marsh is a spillway that overflows into Deer/Blue Heron lake. Because the eroded area has expanded so far into the marsh, it leaves huge quantities of wrack piled up at the end of the marsh's boundary during flood events.



The amount of wrack piled up against the spillway and surrounding area could ultimately act like a dam in front of the spillway causing flooding in other areas during higher than normal tide events. A large amount of wrack gets pushed into the interior lakes, which causes them to become shallower, effecting the amount of runoff drainage that can occur within the interior of the island.



Photos, Dennis Kautz

On the spillway at ground level, evidence of the wrack being pushed into Deer/Blue Heron lake is visible. The spillway itself appears to be in good condition, and a sign posted from OCRM is for rock replenishment by the PSD in 2018-19.



Photo, Dennis Kautz

Looking out towards the salt marsh from the spillway shows the huge amount of wrack that has built up at the end of the salt marsh.



A good illustration of how spartina grass in the salt marsh helps control wave action. In the large opening, waves reach the sandy area at or near full strength, but the wave energy flowing through the grass is dispersed quickly and has almost no force left shortly through the grass.

An aerial photograph of a beach. On the left side, there is a rocky area with many grey and blue stones. The rest of the image shows a sandy beach with waves crashing onto the shore. The water is a light greenish-blue color, and the foam of the waves is white. The text 'Shoreline Status' is overlaid in the center in a large, white, sans-serif font.

Shoreline Status

Fripp Island - Shoreline Committee

Darryl Zoeckler - January 24, 2022