

THIN-LAYER PLACEMENT PROJECT SHEET



Marsh Restoration at Jekyll Island

August 2026

Location: Jekyll Creek, Georgia

Type: Marsh Restoration

Area: 5 Acres

City: Jekyll Island, Georgia

County: Glynn County, Georgia

Main Agencies: US Army Corps of Engineers, Georgia Department of Natural Resources, National Marine Fisheries Service, US Fish and Wildlife Service, The Nature Conservancy, Jekyll Island Authority, Cottrell Dredging, and Georgia Southern University

State/Province: Georgia

Country: USA



Thin Layer Placement site at Jekyll Creek. Photo taken from Georgia Department of Natural Resources.

Background

Jekyll Island is one of Georgia's barrier islands along the Atlantic Intracoastal Waterway. The island's marsh platform is dominated by *Spartina alterniflora* (smooth cordgrass) and represents a typical southeastern US salt marsh system that provides critical ecosystem services, including shoreline stabilization, nutrient cycling, and habitat for commercially and ecologically important species such as blue crab, shrimp, and estuarine-dependent fish (O'Brian 2024). The area is also utilized by migratory shorebirds and wading birds and supports a range of protected coastal habitats managed in part by the Jekyll Island Authority (JIA 2026).

Over the past several decades, portions of the marsh adjacent to Jekyll Creek have experienced degradation due to a combination of factors including relative sea level rise, reduced sediment supply, boat wake erosion, and hydrologic alterations associated with navigation channel maintenance (GADNR, 2026). These stressors have contributed to declining marsh elevation, edge erosion, and reduced vegetative productivity. In response, a thin layer placement (TLP) project was implemented to beneficially use dredged material from routine maintenance of the Intracoastal Waterway. The primary objectives of the project were to increase marsh surface elevation, enhance vegetation resilience, and evaluate TLP as a sustainable sediment management strategy for southeastern coastal systems experiencing sediment deficits and accelerated inundation.

Project Description

The Jekyll Island TLP project involved the placement of a thin layer of hydraulically dredged sediment over approximately 5 acres of low-elevation marsh adjacent to the navigation channel. Planning for this effort began in 2019, with construction conducted in phases between late 2020 and early

2022 in coordination with maintenance dredging activities managed by the US Army Corps of Engineers –

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Savannah District (GADNR). Sediment was dredged from Jekyll Creek and nearby channel reaches and transported via pipeline to the marsh surface, where it was distributed using spray discharge techniques to achieve an average placement thickness of approximately 10 to 15 cm. Approximately 97% of the 200,000 cubic yards of dredged sediment was used to fill deep areas of St. Simon Sound, while the remaining 5,000 cubic yards were placed in the marsh area (GADNR, 2026). To minimize environmental impacts, containment strategies such as low earthen berms and coir fiber logs were installed along tidal creek margins to limit sediment runoff and protect adjacent subtidal habitats. Construction windows were timed to avoid sensitive periods for fish spawning and bird nesting. In addition, reference (control) areas were established within nearby untreated marsh to support comparative monitoring.

Monitoring is a central component of the project and includes pre- and post-placement assessments of marsh elevation (using Real Time Kinematic Global Positioning System [RTK GPS] and surface elevation tables [SETs]), vegetation response (percent cover, stem density, and biomass of *Spartina alterniflora*), and soil characteristics (bulk density, organic content, and porewater salinity). Hydrologic and geomorphic parameters, such as tidal inundation frequency, creek morphology, and sediment accretion rates, are also being tracked. Biological monitoring includes nekton utilization and bird surveys to assess habitat function. Post-construction monitoring is planned over a 3-to-5-year period to evaluate both short-term disturbance and long-term resilience outcomes.

According to the Georgia Department of Natural Resources, project costs are estimated to be in the range of \$6 million, leveraging federal navigation funds alongside state and local contributions (GADNR, 2026). Key partners include the U.S. Army Corps of Engineers-Savannah District, the Jekyll Island Authority, and regional academic and environmental organizations. The project serves as an important pilot for the application of thin layer placement in southeastern U.S. marshes, where sediment dynamics, tidal range, and vegetation recovery trajectories differ from those on the west coast and in the northeastern United States.

Findings

TLP monitoring and ecosystem response analysis at Jekyll Island was conducted by Georgia Southern University and the University of South Carolina. The final report prepared by Hladik et al. 2025 can be found at: https://media.defense.gov/2025/Dec/16/2003843124/-1/-1/1/W81EWF-23-SOI-0012_2025.PDF.

References

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Marsh Restoration at Jekyll Island

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Points of Contact

U.S. Army Corps of Engineers – Savannah District
<https://www.sas.usace.army.mil>
Phone: (912) 652-5279
Email: cesas-cco@usace.army.mil

Or

Jekyll Island Authority
Local Stewardship and Community Liaison
Phone: (912) 635-3636
Email: info@jekyllisland.com

Main Agencies:

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Information on thin layer placement (TLP) case studies has been compiled as part of a DOTS/EWN project to provide a source of information, knowledge, and experience on TLP of sediment or dredged material in aquatic environments. The Thin Layer Placement Website and Map-Portal are funded by the US Army Engineer Research and Development Center (ERDC). POCs for the Thin Layer Placement Website and Map-Portal are:

- Damarys Acevedo-Acevedo, PE
Damarys.Acevedo-Acevedo@usace.army.mil, 601-642-4375
- Catherine Thomas, PhD
Catherine.C.Thomas@usace.army.mil, 601-634-3797



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