

THIN-LAYER PLACEMENT PROJECT SHEET



Marsh Restoration at Deer Island

August 2026

Location: Deer Island, Mississippi

Type: Marsh Restoration

Area: 100 Acres

City: Biloxi, Mississippi

County: Harrison County, Mississippi

Main Agencies: US Army Corps of Engineers (USACE), Mobile District, MS Department of Marine Resources (MDMR), National Oceanic & Atmospheric Administration (NOAA)

State/Province: Mississippi

Country: USA



Thin layer sediment placement site at Deer Island Preserve to restore 100 acres of marsh habitat. Photo taken from the Engineering With Nature website (EWN 2024)

Background

The Deer Island Coastal Preserve is located off the coast of Biloxi in the northern Gulf of Mexico and is associated with a complex of tidal marshes, seagrass beds, and barrier island habitats. These systems provide critical ecological functions, including storm surge attenuation, habitat for fisheries, support for migratory bird populations. The areas surrounding Deer Island have been significantly impacted by a combination of chronic shoreline erosion, reduced sediment supply, and acute disturbances from major storm events (NbS n.d.; EWN 2023).

In August 2010, shoreline restoration began at Deer Island to address ecosystem damage and severe erosion caused by Hurricanes Katrina, Gustav, and Ike (Gerhardt-Smith et al 2015). Post-storm recovery has been uneven, with many marsh areas experiencing persistent elevation deficits and vegetation loss (EWN 2023). Continued relative sea level rise and wave energy exposure have significantly affected the limited natural recovery processes. In response, a sediment placement project was developed to enhance marsh elevation and stabilize degraded areas through the beneficial use of dredged sediment, with the goal of restoring ecological function and increasing resilience to future storm events.

Project Description

In 2019, Deer Island Lagoon was restored using sediment obtained from nearby navigation channel maintenance dredging conducted by the U.S. Army Corps of Engineers – Mobile District and hydraulically pumped to the site (EWN 2024). The restored area consists of approximately 100 acres treated with 170,000 cubic yards of fine-grained material.

The overall goal of this effort was to create marsh habitat that will contribute to a more resilient shoreline and protect the island against intense storm events (EWN 2024). As of August 2024, the US Army Corps of Engineers (USACE) and the MS

Lagoon Restoration at Deer Island

Department of Marine Resources (MDMR) proposed to restore approximately 400 acres of habitat (USACE 2024).

In recent years, monitoring efforts to include pre- and post-placement assessments of the shoreline position as well as the impacts of restored vegetation on wave attenuation has been proposed by USACE (EWN 2023). This effort would encourage collaboration between USACE Mobile District and Northeastern University to yield validated simulation models for the Deer Island Restoration Project (USACE 2023). To date, no funding has been awarded for monitoring efforts at Deer Island.

Findings

A summary of the outcome of this effort can be found at: <https://ewn.erdcdren.mil/built-projects/deer-island-aquatic-ecosystem-restoration/>.

References

- Engineering With Nature (EWN). 2023. Investigation of Long-term Variations of Restored Shoreline and Marsh on Deer Island. <https://ewn.erdcdren.mil/research/project/investigation-of-long-term-variations-of-restored-shoreline-and-marsh-on-deer-island/>. [Site accessed 08 May 2026]
- Engineering With Nature (EWN). 2024. Deer Island Aquatic Ecosystem Restoration. <https://ewn.erdcdren.mil/built-projects/deer-island-aquatic-ecosystem-restoration/>. [Site accessed 08 May 2026]
- Gerhardt Smith, J., McDonald, J., Rees, S., Lovelace, N. 2015. Deer Island aquatic ecosystem restoration project. EWN Technical Notes Collection. ERDC TN-EWN-15-2, Vicksburg, MS: U.S. Army Engineer Research and Development Center.
- Nature-based Solutions (NbS) Initiative. n.d. Deer Island Marshland Restoration Project. <https://casestudies.naturebasedsolutionsinitiative.org/casestudy/deer-island-marshland-restoration-project/>. [Site accessed 08 May 2026]
- USACE. 2024. Deer island ecosystem restoration Mississippi coastal improvements program Biloxi, Harrison County, Mississippi. Public Notice No. FP24-DI01-13. https://www.sam.usace.army.mil/Portals/46/docs/planning_environmental/docs/PN/08282024_Deer%20Island_DRAFT_PN_COMPLETE_.pdf?ver=wS-MkQuNDNkZUW0zDHq1Mw%3D%3D.

Points of Contact

U.S. Army Corps of Engineers – Mobile District
Project Management Office
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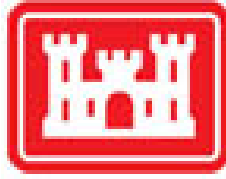
US Army Corps
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Engineer Research and Development Center
Dredging Operations Technical Support Program

August 2026

Main Agencies:

Funding for this project has been provided by:



**National Atmospheric & Oceanic Administration
Mississippi Department of Marine Resources
U.S. Army Corps of Engineers – Mobile District**

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:

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