



Bottomland Hardwood Establishment on Dredge Material – Zydeco Ridge Mitigation Site

ERDC Dredging Operations Technical Support Program (DOTS)

U.S. ARMY CORPS OF ENGINEERS

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Response Summary:

Zydeco Ridge is a bottomland hardwood site established as mitigation by the New Orleans District in 2019, utilizing sediment dredged from Lake Pontchartrain (Figure 1). Spanning approximately 150 acres, the site currently faces challenges with tree and vegetation growth, likely due to the unfavorable soil conditions, characterized by high salinity, elevated sand content, and alkaline pH levels. Previous vegetation establishment efforts have been unsuccessful and resulted in nearly complete mortality of planted species.

Previous soil sampling efforts have been inconsistent, lacking uniformity in both field acquisition method and location. To ensure effective long-term monitoring, a standardized approach is crucial. It is recommended that soil sampling be conducted twice a year, during late summer and winter, to capture seasonal variations in salinity and other key soil parameters. Samples should be analyzed for pH, organic matter content, and salinity. Additionally, photographs should be taken at a subset of sampling locations during each visit to document visual changes in site conditions over time.

To facilitate site restoration, salt-tolerant vegetation species have been identified for use in areas with suitable soil properties. These selected species outcompete less tolerant species due to their resilience in high salinity environments, improve soil conditions by promoting organic matter accumulation, and enhance soil structure, thereby creating a foundation for the eventual establishment of desired vegetation species. Future steps will involve continued monitoring and adaptive management based on the data collected, to ensure better project outcomes over the life of the site.



Figure 1. Image of Zydeco Ridge mitigation site. Outlined area is area designed to be 150 acre bottomland hardwood site.

Period of Performance:

September 2024

Benefits of the Response to the USACE Dredging/Navigation Program:

The sampling and analysis plan will guide the collection of essential data required for development of ecological restoration best management practices for establishing bottomland hardwood vegetation on dredged materials at this beneficial use mitigation bank, to ensure successful future restoration efforts and technical guidance.

Deliverable:

The technical response to the New Orleans District provided protocols for sampling methods, specified sampling locations, identified required soil analyses, and offered recommendations for vegetation species selection and placement.



Providing environmental and engineering technical support to the U.S. Army Corps of Engineers Operations and Maintenance navigation and dredging missions

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