

# THIN-LAYER PLACEMENT PROJECT SHEET



## Fowl River

August 2016

**Location:** Fowl River

**Type:** Historical dredged material placement

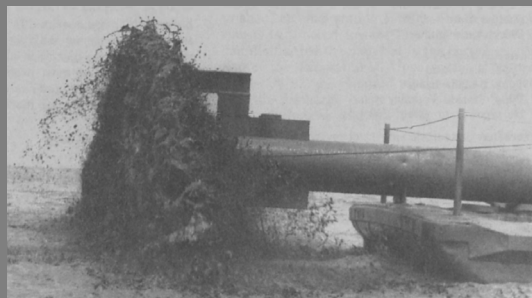
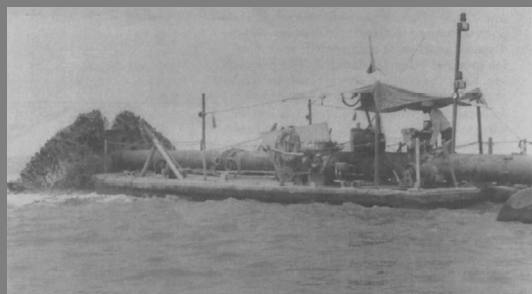
**City:** Mobile

**County:** Mobile

**Agencies:** US Army Corps of Engineers, US Environmental Protection Agency, National Marine Fisheries Service, US Fish and Wildlife Service, MS and AL state agencies

**State/Province:** Alabama

**Country:** United States



Taken from Nester and Rees 1988

### Background

Fowl River is a small coastal stream on the western shore of Mobile Bay. The Fowl River navigation channel is a secondary channel to the Mobile Bay ship channel, which is mainly used for commercial fishing and recreational boating. Material dredged from the channel for maintenance purposes was typically placed open water and in wetland areas. The lack of adequate disposal areas lead to the use of open-water thin layer placement in 1986. This technology was expected to minimize short and long-term impacts on the aquatic ecosystem as compared to conventional open-water disposal. The main purpose of this project was to determine the physical and biological impacts caused by thin layer placement. This was achieved through the implementation of a monitoring program that was designed to monitor the dredging and disposal areas pre, during, and post-dredging/disposal. The disposal area is located in Mobile Bay, south of the Fowl River navigation channel.

### Project Description

Approximately 190,000 CY of dredged material consisting of 40% sand, 50% silt, and 10% sandy clay were placed in a thin-layer over a 240-acre open-water disposal area. The general depth of the disposal area ranged from 4 to 11 ft. The material was dredged hydraulically with a 6-blade cutterhead at 487-497 CY/hr and placed in the disposal area with a wing-mounted baffle plate connected to the pipeline slurry discharge. The target thin-layer thickness was 6 in. The dredging operations were completed within one month.

As part of the monitoring program, the following environmental studies were conducted pre, during and post-dredging/disposal:

- Precision bathymetry (for thin-layer thicknesses ranging between 6 and 8 in.) and sediment profile imagery (for thin-layer thicknesses smaller than 6 in.)
- Water quality (total suspended solids (TSS) and dissolved oxygen (DO) concentrations)
- Infauna abundance
- Fish abundance and diversity

## Findings

Sediment profile imagery showed that 6 weeks post-disposal, dredged material covered approximately 319 acres of the placement area (Wilber 1992). The thickness of dredged material was less than 6 in. over 36% of the area, 6 to 12 in. over 48% of the area, and greater than 12 in. over 16% of the area. One year after disposal, sediment profile imagery indicated that the placement area decreased by 10-20%. No significant impacts to TSS and DO concentrations were detected, with the exception of TSS concentrations during disposal operations (Nester and Rees 1988). The water quality results showed that TSS and DO concentrations have a weak inverse relationship, which is characteristic of well-flushed areas (Houston et al. 1989). Thin-layer placement of dredged material did not have a significant impact on fish and infauna abundance. Recolonization of the dredged material by infauna occurred rapidly (Wilber 1992). Areas with a layer smaller than 6 in. had infauna abundances that approximated background levels 2 weeks post-disposal. Areas with a layer greater than 6 in. required about 20 weeks to reach infauna abundance background levels.

## References

- Houston, L., LaSalle, M., and Lunz, J. (1989) Predicting and Monitoring Dredge-Induced Dissolved Oxygen Reduction. Environmental Effects of Dredging Technical Notes EEDP-06-9, U.S. Army Engineer Waterways Experiment Station, Vicksburg, MS.
- Nester, R.D., and Rees, S.I. (1988) Thin-layer Dredged Material Disposal; Fowl River, Alabama, Test Case. Environmental Effects of Dredging, Vol D-88-4, pp 1-6, U.S. Army Engineer Waterways Experiment Station, Vicksburg, MS.
- Wilber, P. (1992) Case studies of the thin-layer disposal of dredged material – Fowl River, Alabama. Environmental Effects of Dredging, Vol D-92-5, pp 1-5, U.S. Army Engineer Waterways Experiment Station, Vicksburg, MS.

## Points of Contact

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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