

# DREDGING

## Purpose:

To establish and maintain navigation channels and harbors of sufficient size to accommodate shipping vessels.

## Types of Dredging:

Construction - the removal of materials previously undisturbed to facilitate new navigation channels or water projects, e.g., locks and dams.

Maintenance - The periodic and repetitive removal of accumulated sediment from navigation channels and harbors to maintain authorized depths and widths.

## Responsible Agencies:

Corps of Engineers for navigation channels  
Port Authorities for harbors

## Major Areas of Dredging:



1 - Main approaches (approach channel in ocean); dredged material primarily sand.

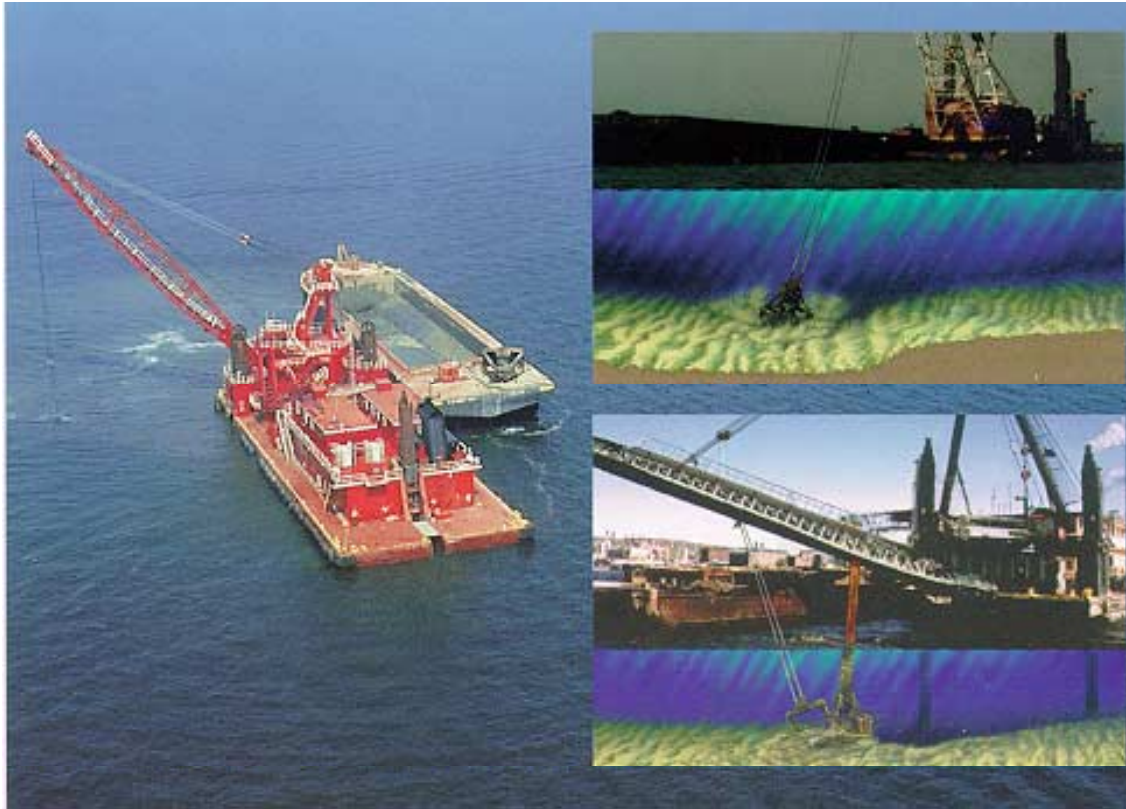
- 2- Bar channels (sandbars at inlets); dredged material primarily coarse-grained sand.
- 3 - Entrance channels (to harbors); dredged material primarily sand to fine-grained silt and clay.
- 4- Berthing areas (harbors/ports); dredged material primarily silt and some sand.
- 5 - Inland waterways (intracoastal waterways and river channels); silt and sand.

### **Types of Dredging Vessels:**

Snagboat - Used to break up logjams and to clear debris, sunken vessels, and dilapidated piers that may be hazardous to navigation.



- Mechanical - Dipper dredge and clamshell dredge
- removes hard packed material or debris
  - cannot handle fine-grained sediment, such as silt or sand
  - places materials into barges for transport to disposal sites



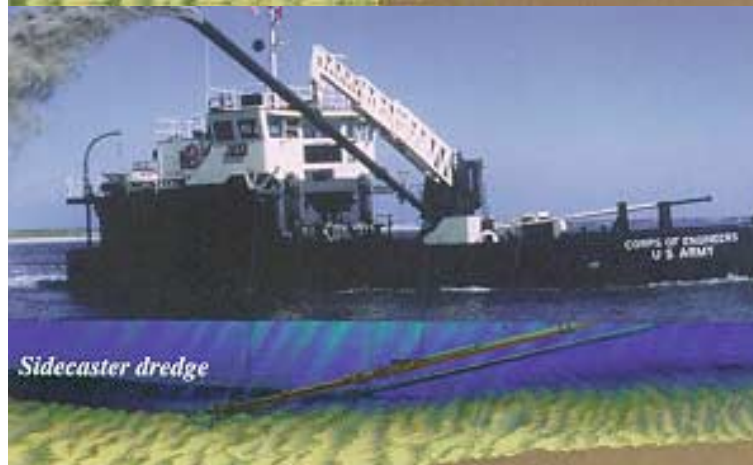
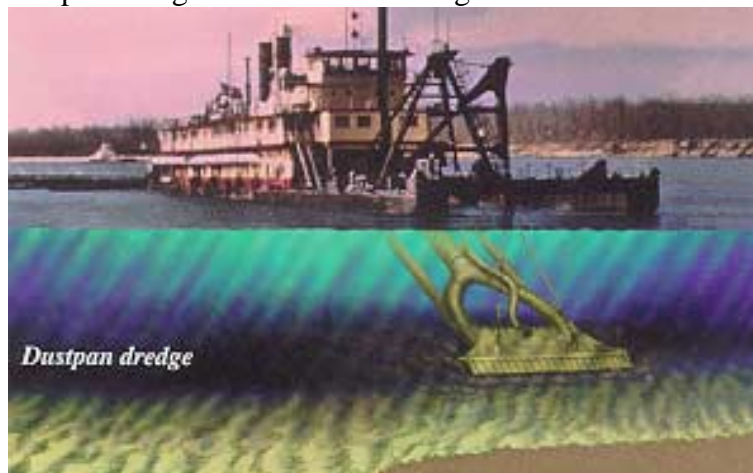
Hydraulic -



- cutterhead pipeline dredge
  - uses rotating cutter at end of arm to suck loose materials into pipeline
    - for deposit at a disposal site
  - can work 24 hours a day
  - limited capability in rough weather
  - pipeline can be obstruction to navigation
  - operates primarily in shallow draft navigation channels



- - self-propelled hopper dredge
  - stores sediment within vessel for disposal later at approved site
  - works in deep water (primarily in harbors and ports)
  - cannot dredge continuously
  - can operate in rough water
- dustpan dredge and sidecaster dredge



rapid  
navigation

- used to remove loosely compacted coarse-grained material at shoaling sites or where sediment is needed adjacent to a channel.

### Types of Disposal Sites



#### Ocean Placement

- off-shore site approved by Environmental Protection Agency for disposal
- hopper dredge or towed barge with material from inlets, bars, and main approaches
- vessel opens hull and allows sediment to drift to bottom of ocean

#### Beach Nourishment



- placement of material on or near a beach
- usually to replenish an eroding beach
- typically done with pipeline and hopper dredges

#### Upland Placement



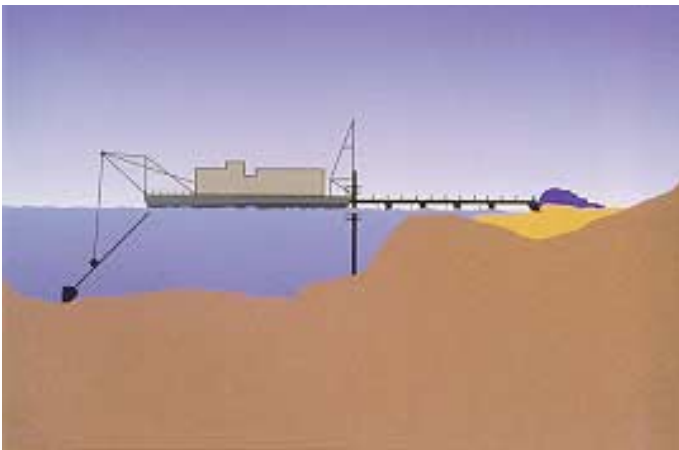
- dredge
- placement of material directly into a diked area, usually by pipeline
  - generally the most economical method of dredging

## Open Water Placement



- placement of dredged materials in near-coastal or inland waters
- may include contaminated materials placed in deep pits or bottom depressions
- material is capped in a precisely engineered manner to ensure cap stays in place and isolates material from environment.

## Within Banks Placement



- generally occurs on river system
- material is placed on banks or downstream of shoals along shoreline
- material, usually coarse-grained sand can be used commercially

### **Environmental Benefits of Dredging**

- Can be used for the following purposes:
  - wetland construction
  - borrow pit reclamation
  - landfill cover
  - construction aggregate
  - beach nourishment
  - wildlife habitat
- Scientifically approved measures to isolate contaminated materials from environment

Extracted From **Dredging**, US Army Corps of Engineers Pamphlet, Undated.