


US Army Corps of Engineers



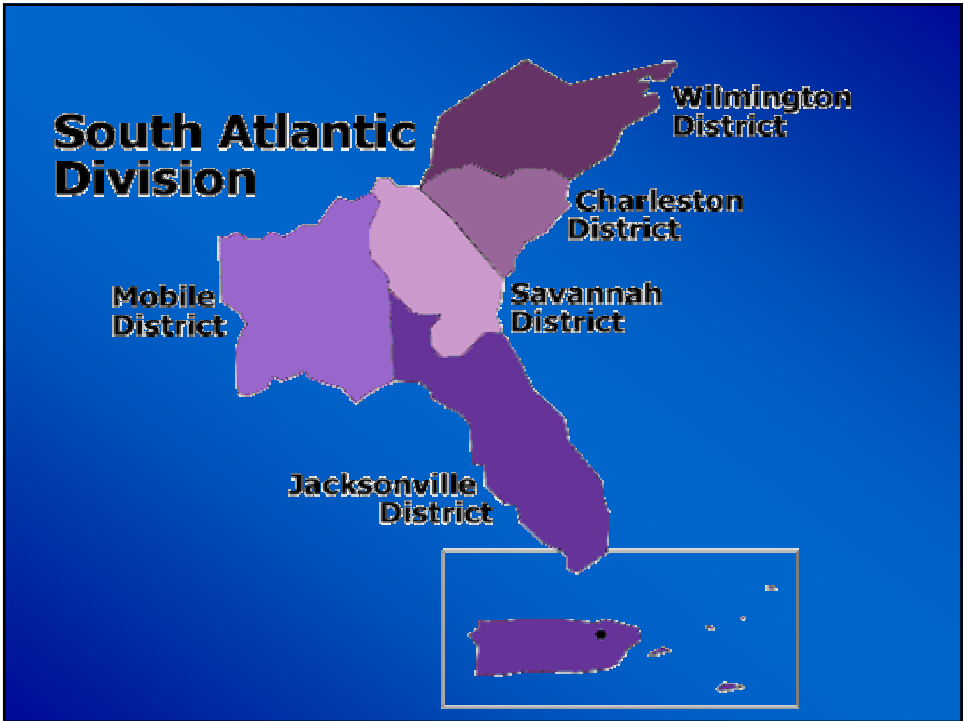
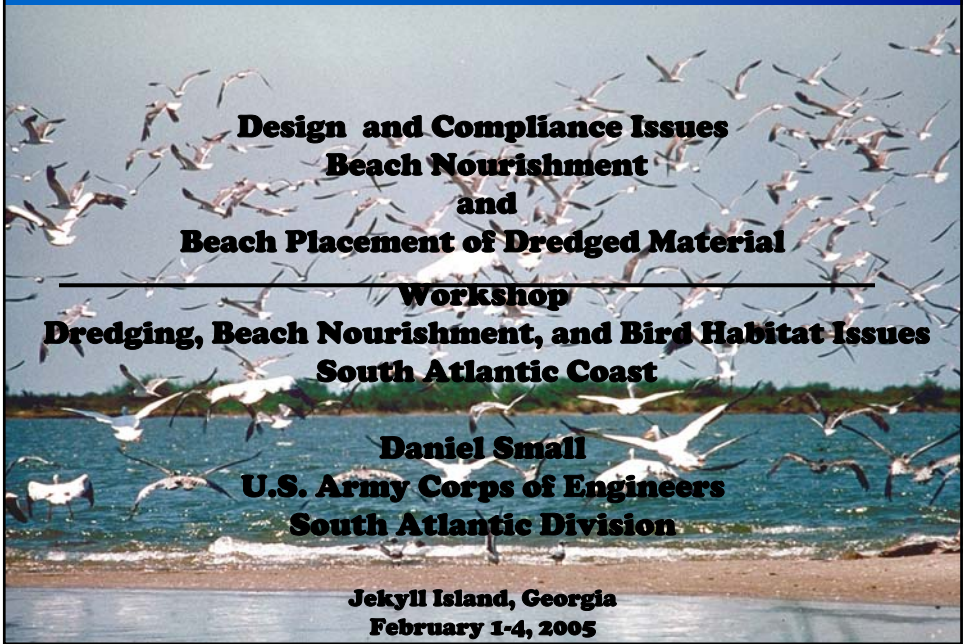
**Design and Compliance Issues
Beach Nourishment
and
Beach Placement of Dredged Material**

Workshop

**Dredging, Beach Nourishment, and Bird Habitat Issues
South Atlantic Coast**

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**Jekyll Island, Georgia
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Objectives

- **USACE**
- **Beach Related Activities**
- **Civil Works Design-Planning Process**
- **Design Considerations**
- **Design Considerations-Shorebirds and Waterbirds**
- **USACE Environmental Operating Principles**
- **Knowledge Management**

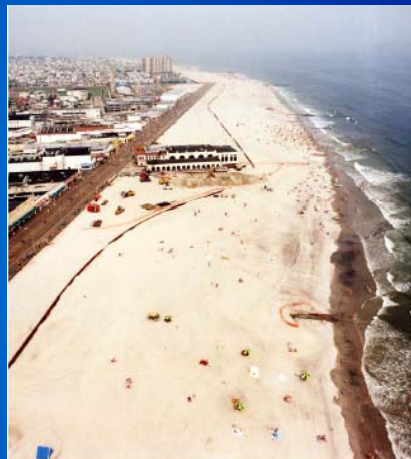
USACE Involvement with Beach Activities

- **Beach Erosion-Hurricane Wave Protection**
- **Beach Placement of Dredged Material**
- **Regional Sand Management: Systems Approach**
- **Beneficial Use Placement**
- **Emergency Projects**

Shore Protection Projects

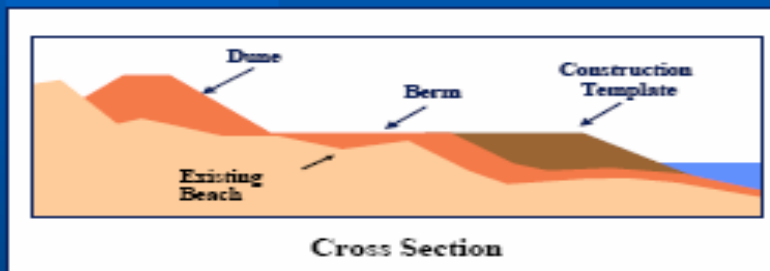


Shore Protection Projects



Design Profiles

Design

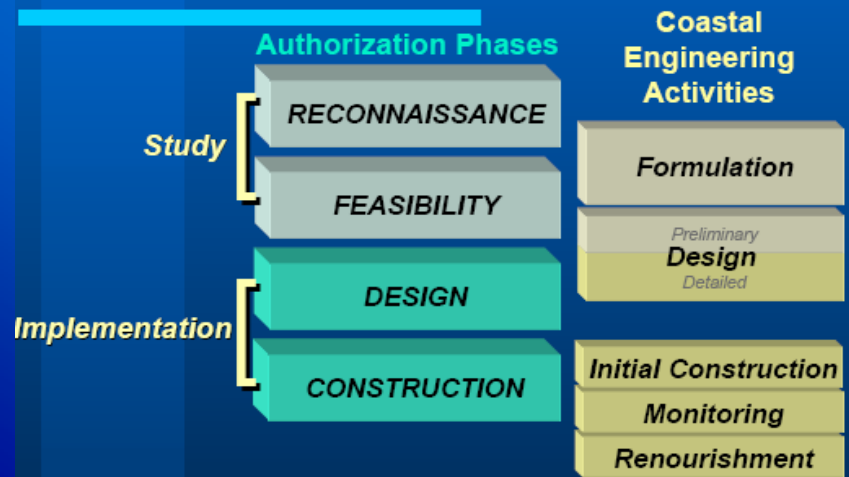


USACE Project Development Process

- **Four Separable Phases:**
 - **Planning**
 - **Design**
 - **Construction**
 - **Operations and Maintenance**

Project Development Process, Cont...

Corps Project Development Process



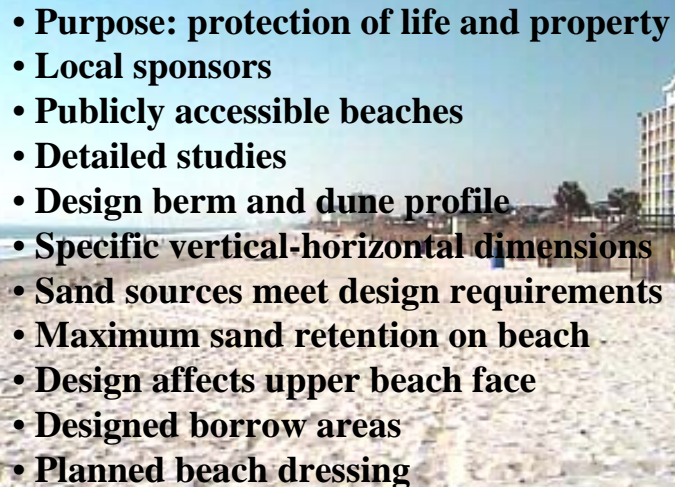
Civil Works Planning Process

- **Process orientated**
- **Established process**
- **Iterative steps**
- **Multidisciplinary**
- **Collaborative**

Six Step Planning Process, Cont...

- Identify problems and opportunities
- Inventory and forecast conditions
- Formulate alternative plans
- Evaluate effects of alternative plans
- Compare alternative plans
- Select recommended plan

General Design Considerations Shore Protection Projects

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- A photograph of a beach scene. In the foreground, there is a wide, sandy beach with some footprints. In the middle ground, there are a few people walking on the beach. In the background, there is a large, multi-story building with a distinctive architectural style, possibly a hotel or resort. The sky is clear and blue.
- Purpose: protection of life and property
 - Local sponsors
 - Publicly accessible beaches
 - Detailed studies
 - Design berm and dune profile
 - Specific vertical-horizontal dimensions
 - Sand sources meet design requirements
 - Maximum sand retention on beach
 - Design affects upper beach face
 - Designed borrow areas
 - Planned beach dressing

Shore Protection Projects, Cont...



Hurricane Wave Protection



General Design Considerations Beach Placement of Dredged Material

- Environmentally acceptable
- Disposal of routine maintenance dredged material
- Beneficial uses
- No dune creation
- Low berm (high water seaward to littoral zone)
- Spatial limits – disposal placement profile
- Material returns to littoral system
- Placement site – certain radius of dredging site
- Construction features – limited beach dressing; normally no planting

Beach Placement



Beach Placement, Cont...



Beneficial Placement



Beneficial Placement, Cont...



Dredging Process



- **Removal (excavation of sediments)**
- **Transport to the beach**
- **Placement on the beach**

General Design Considerations Beach Construction-Excavation



Offshore Operations

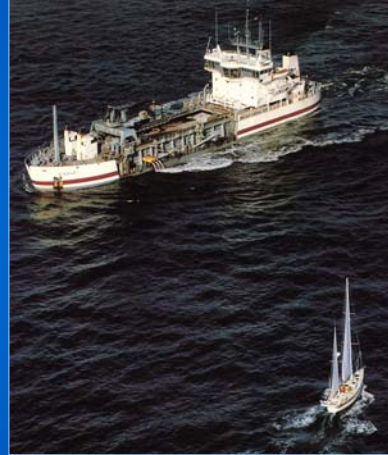
Hydraulic Dredges	Hopper Dredges
- Borrow Area location	- Borrow area location
- Pipeline placement	- Pump out capabilities
- Beach dressing	- Dredging depths

Hydraulic (Pipeline) Dredge



Training Suction Hopper Dredges

TRAILING SUCTION HOPPER DREDGES



Hopper Dredging, Cont...



Hopper Dredges: Pump-out



General Design Considerations Beach Placement

- Dredge pipes: transport material
- Front end loaders: move pipes
- Dozers: move material



General Design Considerations Beach Construction



General Design Considerations Beach Construction, Cont...



General Design Considerations Environmental Laws and Regulations

- National Environmental Policy Act (NEPA)**
- Endangered Species Act (F&WS and NMFS)**
- Fish and Wildlife Coordination Act**
- National Historic Preservation Act**
- Coastal Zone Management Act**

General Design Considerations Environmental Laws and Regulations, Cont...

- Magnuson Fishery Conservation and Management Act**
- Clean Water Act Section 404 (Discharged of Dredged Material)**
- Section 401 (Water Quality Certification)**
- Coastal Zone Management Act and State Coastal Programs**
- Clean Air Act**

General Design Considerations Shore and Colonial Waterbirds



General Design Considerations Shorebirds and Colonial Waterbirds, Cont...

Planning and Design Considerations:

- Existing conditions
- Existing uses
- Environmental windows
- Monitoring
- Avoidance



USACE Environmental Operating Principles (EOPs)

Integral part of:

- **USACE missions**
- **Decision-making**
- **Programs**
- **Planning process**
- **Projects**



Consistent with:

- **National Environmental Policy Act**
- **Other environmental statutes**

Environmental Operating Principles (EOPs) Gateway to Collaborative Relations

- **Common mission**
- **Common understanding**
- **Shared knowledge**
- **Knowledge management**

USACE Environmental Operating Principles:

1. Strive to achieve Environmental Sustainability. An environment maintained in a healthy, diverse, and sustainable condition is necessary to support life.
2. Recognize the interdependence of life and the physical environment. Proactively consider environmental consequences of Corps programs and act accordingly in all circumstances.
3. Seek balance and synergy among human development activities and natural systems by designing economic and environmental solutions that support and reinforce one another.
4. Continue to accept corporate responsibility and accountability under the law for activities and decisions under our control that impact human health and welfare and the continued viability of natural systems.



USACE Environmental Operating Principles: Cont...

5. Seeks ways and means to assess and mitigate cumulative impacts to the environment; bring systems approaches to the full life cycle of our processes and work.
6. Build and share an integrated scientific, economic, and social knowledge base that supports a greater understanding of the environment and impacts of our work.
7. Respect the views of individuals and groups interested in Corps activities, listen to them actively, and learn from their perspective in the search to find innovative win-win solutions to the Nation's problems that also protect and enhance the environment.



Knowledge Management

- **USACE Threatened, Endangered, and Sensitive Species Protection and Management System:**

<http://el.erdc.usace.army.mil/tessp/>

- **NOAA Beach Nourishment Web site:**

<http://www.csc.noaa.gov/opis/html/behsand.htm>

- **Biological Monitoring of Beach Nourishment Operations**

<http://www.usace.army.mil/business/prjlinks/coastal/asbury/index.htm>

- **The National Shoreline Management Study:**

<http://www.fwr.usace.army.mil/NSMS>