SUSTAINABLE SEDIMENT MANAGEMENT AND DREDGING SEMINAR
28-30 NOVEMBER 2018
GALVESTON, TX

Sediment Beneficial Use: Successes and Challenges
Burton Suedel and Chris Frabotta
Beneficial Use Across USACE Mission Space

- **Navigation**
  - Strategic placement of dredged material supporting habitat development
  - Habitat integrated into structures
  - Enhanced Natural Recovery

- **Flood Risk Management**
  - Natural and Nature-Based Features to support coastal resilience
  - Levee setbacks

- **Ecosystem Restoration**
  - Ecosystem services supporting engineering function
  - “Natural” development of designed features

- **Water Operations**
  - Shoreline stabilization using native plants
  - Environmental flows and connectivity
Challenges

- Perceptions without scientific basis
- Lack of clear regulatory guidance
- Uncertainty dealing with contaminants
- Fear of product liability
- Emerging contaminants, e.g., microplastics, HABs
- CDF capacity issues nationwide
- Re-use of dredged material in existing CDFs

Clear guidance and policy is needed
Principles for Beneficial Use Dredged Material Evaluations

- Consistent with USEPA risk assessment framework
- Recommends developing project goals for BU of dredged material
  - USEPA framing the risk assessment with management goals
- Uses conceptual site models to establish potentially complete exposure pathways
  - Generalized CSMs developed for aquatic, upland, and wetland placement scenarios
- Recommends the initial evaluation be documented and reported
- Suggests chemical, physical, and biological tests
  - Specific sampling and analysis requirements are not stipulated
- Recommends use of reference and control materials in the testing procedures
Beneficial Uses: Two Opportunities

- Beneficial use as part of the dredging and placement process
  - Regional Sediment Management
  - Engineering With Nature® and natural and nature based features

- Beneficial use as part of CDF operations and management process
  - Mining CDFs to maintain capacity
Beneficial Use Categories

Dredged material management categories developed to track beneficial use:
- Beach/nearshore placement for shoreline protection/beach nourishment
- Shallow water placement for wetland or marsh development
- Unconfined in-water placement (river, lake, and estuary)
- Confined in-water placement for beneficial purpose
- Confined in-water placement, including aquatic transfer facility
- Island placement
- Ocean placement beneficial
- Upland confined placement
- Upland placement for land development
- Upland placement for ecological habitat development
- Upland placement for soil reuse
  - Includes use in processed products or construction materials
Engineered Uses

- Beach Nourishment
- Berm Creation
- Capping
- Land Creation
- Land Improvement
- Replacement Fill
- Shore Protection
Agricultural/Product Uses

- Aquaculture
- Crop Production
- Construction Materials
- Landscaping Products
- Top Soil
Environmental Enhancement Uses

- Wildlife Habitat
- Fisheries Improvement
- Wetland Creation
Beneficial Uses of Dredged Material and Engineering With Nature
SWG BUDM Opportunities

- Learn from prior successes and lessons learned
- Engage stakeholders to understand interests and inform decision making across the project life cycle
- Comprehensively manage the Texas coast from a multi-objective systems portfolio perspective
- Derive synergies across business lines for enhanced efficiency and effectiveness
- Incorporate coastal storm and RSLR resilience and sustainability via integration of built and natural features
- Incorporate EWN and RSM concepts, methods, tools, and resources to enable more sustainable outcomes
SWG BUDM Opportunities

- Performance of BU placement configurations
  - Mounds with edges
  - Marsh with edges
  - Contributions to coastal resilience (wider island)
  - Value of upland habitat and perched wetlands

- Increasing scientific understanding by communicating scientific results to stakeholders
SWG BUDM/EWN Strategy

- Narrow knowledge gaps by creating synergies between S&T and USACE District practice:
  - EWN
  - RSM
  - Conservation planning (ESA Sec 7(a))

- Transform practice for increased efficiency and effectiveness via SWG as an EWN® Proving Ground
  - Demo test and refine innovative solutions
  - Deploy enabling technologies
  - Integrate and apply tools for advancing capabilities
SWG BUDM/EWN Strategy

Broaden Regional Benefits

- Harvest and reuse DM from upland confined placement areas as a BU strategy
- Create natural and nature based elements via BUDM to promote:
  - Emergent wetland restoration
  - Sub-aquatic habitat restoration
  - Coastal resiliency
  - Recreation
  - Commercial fisheries
 Opportunities

- Integrate Natural and Nature-Based Features (NNBF) with structural and non-structural measures to provide multiple lines of defense against storms and sea level rise
- Generate full array of relevant economic, environmental and social ecosystem services
Beneficial Uses Path Forward

- Many opportunities
- Focus energy to motivate and facilitate innovation in both technical and business processes
- Accelerate progress through co-development of solutions
- Important to elevate communication about advancing practice to enhance project value
USACE GALVESTON DISTRICT
BENEFICIAL USE AND IMPLEMENTATION OF REGIONAL SEDIMENT MANAGEMENT MEASURES

Christopher Frabotta
Chief, Navigation Branch
Galveston District, U.S. Army Corps of Engineers
November 28-30 2018

“The views, opinions and findings contained in this report are those of the author(s) and should not be construed as an official Department of the Army position, policy or decision, unless so designated by other official documentation.”
Texas is the number two state in the nation for waterborne commerce. Texas ports generate over $5 billion in local and state tax revenue, and over $9 billion in federal import tax revenue each year.
SWG Beneficial Use Project Overview

- Galveston Beach Placement (Galveston Harbor & Chl)
- South Padre Island Beach Placement (Brazos Is. Harbor)
- Bessie Heights (Sabine-Neches Waterway)
- Pierce Marsh (Gulf Intracoastal Waterway)
Partnered with the Texas General Land Office and Galveston Island Park Board of Trustees to place material from channel on beach in lieu of offshore placement.
Galveston Beneficial Use Beach Placement (2014)

Partnered with the Texas General Land Office and Galveston Island Park Board of Trustees to place material from channel on beach in lieu of offshore placement.
Galveston Beneficial Use Beach Placement (2014)

Partnered with the Texas General Land Office and Galveston Island Park Board of Trustees to place material from channel on beach in lieu of offshore placement.
Galveston Beneficial Use Beach Placement (2015)

Approximately 500,000 CY placed, 4500’ of beach constructed
SWG Beneficial Use Project Overview

- Galveston Beach Placement (Galveston Harbor & Chl)
- South Padre Island Beach Placement (Brazos Is. Harbor)
- Bessie Heights (Sabine-Neches Waterway)
- Pierce Marsh (Gulf Intracoastal Waterway)
Beneficial Use of Dredged Material (BUDM), a Corps GLO Partnership Success

- Bessie Heights Marsh
- Texas Point National Wildlife Refuge
- Kaplan Beach at Rollover Pass
- Pierce Marsh
- Galveston Island
- South Padre Island & Cameron County
Beach
Nourishment
•3000 feet of beach nourishment
•City of South Padre in background
•Hydraulic pipeline at right
SWG Beneficial Use Project Overview

- Galveston Beach Placement (Galveston Harbor & Chl)
- South Padre Island Beach Placement (Brazos Is. Harbor)
- Bessie Heights (Sabine-Neches Waterway)
- Pierce Marsh (Gulf Intracoastal Waterway)
Beneficial Use of Dredged Material (BUDM), a Corps GLO Partnership Success

Bessie Heights Marsh
Texas Point National Wildlife Refuge
Kaplan Beach at Rollover Pass
Pierce Marsh
Galveston Island
South Padre Island & Cameron County
Sabine Neches Waterway – Maintenance dredging of Neches River Middle Reach typically occurs every 5 years

SWG partnered with the Texas General Land Office and the Sabine Neches Navigation District to place material from channel in Bessie Heights marsh restoration project in lieu of upland placement.
Pierce Marsh Beneficial Use Marsh Restoration

Maintenance dredging of the Gulf Intracoastal Waterway, Causeway to Bastrop Reach typically occurs every 2 years

SWG partnered with the Texas General Land Office, Galveston Bay Foundation and State and Federal Resource areas to place material from GIWW into Pierce Marsh

Contract completed by Mike Hooks, Inc. in July 2016
Pierce Marsh Construction: 144,000 CY and 11,800 linear feet of containment berms
ON FACEBOOK
www.facebook.com/GalvestonDistrict

ON TWITTER
www.twitter.com/USACEgalveston

ON YOUTUBE
www.YouTube.com/Galveston District

ON DVIDS
www.dvidshub.net/units/USACE-GD

ONLINE
www.swg.usace.army.mil