



USACE – Galveston District: *“Texas Coastal Custodians”*

EWN Opportunities for Delivering Value to the Nation

30 SEP – 1 OCT 2014



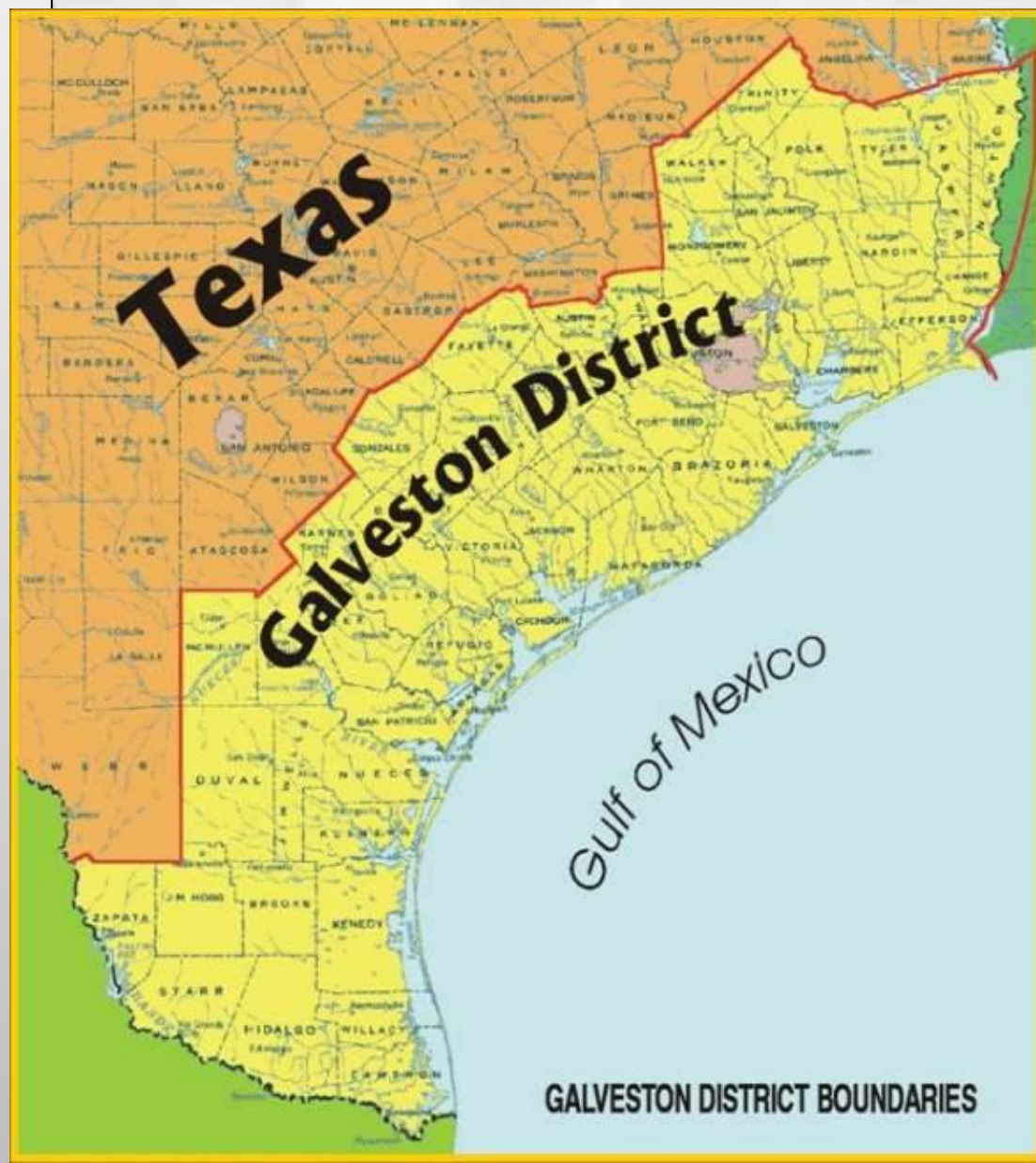
US Army Corps of Engineers
BUILDING STRONG®





Galveston District Responsibilities

- ✓ 50,000 square mile district boundary (encompassing the Texas coast from Louisiana to Mexico)
- ✓ 1,000+ miles of channels (750 miles shallow draft, 270 miles of deep draft)
- ✓ 700 miles of coastline
- ✓ 311 full time employees
- ✓ 28 ports (15 deep draft, 13 shallow draft)
- ✓ 16 Congressional districts
- ✓ 48 Texas counties
- ✓ 18 Coastal counties (coastal bay estuaries)
- ✓ 9 watersheds
- ✓ 2 Louisiana parishes





Galveston District Missions and Business Lines

Civil Works

- Navigation
- Flood Risk Management
- Environmental Restoration

Interagency Support

- Customs & Border Protection
- Immigration & Customs Enforcement
- Int'l Boundary & Water Commission

Regulatory

- Section 10 and Section 404 Permits

Disaster Response and Recovery

- FEMA Missions



BUILDING STRONG®

**Coastal Navigation:
Value to the Nation**

Texas ranks #2 for total tonnage and accounts for over 21% of the Nation's tonnage (2012)

**LEADING U.S. PORTS
(2012 Tonnage)**

Houston (#2 – 238.2 million tons)
#1 Importing Port & #2 Total Tonnage

Beaumont (#5 – 78.5 million tons)
#1 Military Outload Port in the World

Gulf Intracoastal Waterway (73 million tons – Texas portion)
#3 Inland Waterway

Corpus Christi (#7 – 69 million tons)
America's Energy Port

Texas City (#11 – 56.7 million tons)
Services Largest Petrochemical Complex

Port Arthur (#23 – 30.6 million tons)
Vital Strategic Port

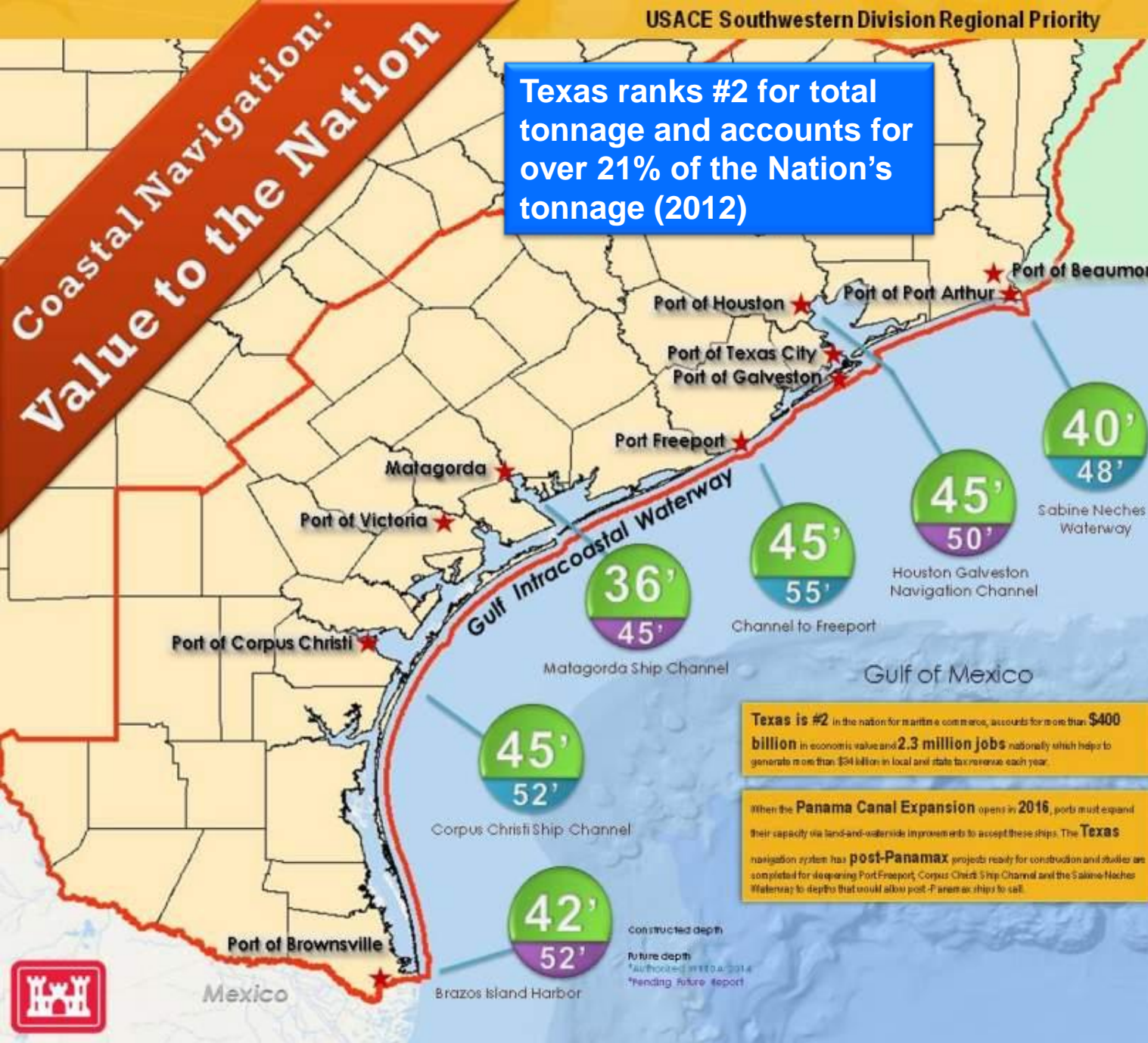
Freeport (#31 – 22.1 million tons)
World Class LNG Facility

Galveston (#47 – 11.6 million tons)
#5 Cruise Ship Port

Matagorda to include Port of Port Lavaca and Port of Point Comfort (#48 – 11.6 million tons)
Generates Annual Business Revenues of Nearly \$2 Billion

Brownsville (#69 – 5.6 million tons)
#1 Ship Recycling Port

Victoria (#78 – 4.5 million tons)
#2 Shallow-Draft Port for Domestic Crude Petroleum



Texas is #2 in the nation for maritime commerce, accounts for more than \$400 billion in economic value and 2.3 million jobs nationally which helps to generate more than \$34 billion in local and state tax revenue each year.

When the **Panama Canal Expansion** opens in 2016, ports must expand their capacity via land-and-water-side improvements to accept these ships. The **Texas** navigation system has **post-Panamax** projects ready for construction and studies are completed for deepening Port Freeport, Corpus Christi Ship Channel and the Sabine Naches Waterway to depths that would allow post-Panamax ships to sail.

Constructed depth
Future depth
*Authorized FY1104-2014
*Pending Future Report





Building BLOCS & Priorities

Building a Legacy Of Consistent Success

Headquarters Priorities



1 SUPPORT NATIONAL SECURITY

2 TRANSFORM CIVIL WORKS

3 REDUCE DISASTER RISKS

4 PREPARE FOR TOMORROW

USACE Campaign Plan

Southwestern Division FY15 Priorities



- Implement sustainable infrastructure systems and strategies for the Texas Gulf Coast through innovative solutions.
- Collaborate with partners to develop and implement infrastructure strategies to sustain existing USACE multipurpose reservoirs, and aid in the development and implementation of State Water planning initiatives.
- Partner with industry and users of the MKARNS to develop a model system to ensure its long-term reliability and sustainability.
- Assist military and IIS partners in making informed investment decisions to meet their project needs.
- Grow, cultivate and maintain the targeted competencies necessary to meet the future requirements of the nation, while focusing on human capital management principles and strategies to maintain a relevant and ready workforce aligned for future missions.
- Integrate knowledge management, new technologies and enterprise tools to modernize practices and deliver high-value solutions.

Implementation Plan

Galveston District – FY15 Priorities – DRAFT (Under Board of Directors Discussion)

Commander's Priorities

- 2 3 4 • TX Gulf Coast Strategy (Coastal System/Value to Nation)
- 2 3 4 • Strategic Partnerships with Key Stakeholders
- 2 4 • Accountability and transparency of our delivery process and transformation
- 2 4 • Routine tasks accomplished routinely well
- 1 2 4 • Position the district for the future (People and Resources)
- 1 2 3 4 • Prepared for contingencies
- 1 2 4 • Knowledge Management

Operation Plan

Priority Projects

- Addicks & Barker Dams
- Sabine Pass to Galveston Bay Feasibility Study
- Houston Ship Channel (HSC) Improvements
- Gulf Intracoastal Waterway (GIWW)
- Texas Coastal Study
- Corpus Christi Widening Project
- Freeport PED
- TXDOT Initiative at Brazos River Floodgates
- Matagorda 408/204



BUILDING STRONG®



Lines-of-Sight to SWD Implementation Plan and USACE Campaign Plan

- SWG OPlan Goal 4: Prepare for Tomorrow – Build great people, team, systems, and processes to sustain a diverse culture of collaboration, innovation, and participation to shape and deliver strategic solutions.
- Objective 4.b: Enhance trust and understanding with customers, stakeholders, teammates, and the public, through strategic engagement and communication.



BUILDING STRONG®



Texas Coast Strategy

Maximizing Capital



Communication

Transparency

Stakeholder
Community

Lines of Effort

Improve Navigation
(Deepen / Widen / Safety / Capacity)

Sustain Federal Projects
(Dredging / Placement Area Management)

Support non-Federal Investment
(Regulatory Permits, Real Estate Outgrants,
Partnerships)

Protect the Coastal Zone
(Storm Damage, Ecosystem Restoration,
Levee Certification)

Future

The Texas Coast is protected & resilient, positioned for sustainable economic growth with strategic partnerships that support non-federal investment.



BUILDING STRONG®



Collaboration with Partners/Clients/Stakeholders

Maximizing Capital



Communication

Transparency

Stakeholder Community





Future of the Texas Coast

Shared Visioning for the Texas coast:

- The navigation system (Deep Draft Ports / Shallow Draft Ports / GIWW) is positioned for sustainable **economic growth** and Texas ports continue to drive the regional and national economic engine.
- The Texas Coast environment is protected from coastal erosion & storm surge; **ecologic health** and **community resiliency** are improved;
- USACE has strong **strategic partnerships** within the Texas Coastal Stakeholder community that support Federal and non-Federal investment in the system's infrastructure



Future

The Texas Coast is protected & resilient, positioned for sustainable economic growth with strategic partnerships that support non-federal investment.



Outreach and Execution Strategy Expectations

■ Goals:

- ▶ Sustain/build relevancy with partners and clients across mission business lines for delivering best-in-class products/services now
- ▶ Shape future conditions for cultivating a program portfolio that could not be realized otherwise for supporting Federal and non-Federal investments

■ Objectives

- ▶ Leverage FY 15 SWD Azimuth, FY 15 SWG Priorities/Strategy, and SWG OPlan to support outreach
- ▶ Establish value proposition to guide outreach and execution with continual shaping during implementation for greatest resonance
- ▶ Track and steer programs pursuant to the value proposition
- ▶ Evolve the value proposition cyclically based on successes, challenges, and internal/external feedback





“Deliver and Shape” Value Proposition

- Principle: Enable agency partners to identify/realize CW infrastructure improvements together on unprecedented scope and scale that exploits vibrancy of TX economy

- Strategies
 - ▶ Identify studies/projects of early mutual interest for scoping/programming execution in FYs 15/16/17
 - ▶ Increase dynamic and interactive nature of deliberations between partners to cultivate enhanced program/project partnering
 - ▶ Inform cross-agency out-year program budgets in a coordinated fashion that translates into interdependent value creation
 - ▶ Embrace/cultivate business community financing to cover NFS and Federal study/project expenses to accelerate execution





Coastal TX Protection and Restoration

- FY 15: Complete Recon Report with matrix of phased studies:
 - ▶ Comprehensive coast wide study to further cultivate opportunities
 - CSDRM / ER
 - GIWW Modernization
 - ▶ Galveston Bay FS
 - ▶ Lower Colorado River (LCR)-Matagorda Bay & Matagorda County FSs
 - ▶ Corpus Christi Bay CSDRM / ER FS
 - ▶ South Padre Island ER FS
- FY 15 ERDC R&D Coordination: Advance foundational technical studies for Galveston Bay FS via Cooperative R&D Agreement (CRADA) funded directly to ERDC by non-Federal sector
- FY 15 Budget: Initiate 3x3x3 GI Comprehensive Study in parallel with 3x3x3 priority feasibility study(ies)
- FY16 Work Plan: Compete Low Risk Galveston Bay GI FS as near 3x3x3 compliant, founded on ERDC CRADA technical work
- FY 17 Budget: Advance Low Risk Galveston Bay GI FS





Houston Galveston Navigation Channel Improvement

- FY 15: Complete Recon Report with matrix of phased studies
 - ▶ Boggy Bayou to Turning Basin
 - ▶ Sims Bayou to Houston Ship Channel (HSC) Bridge
 - ▶ HSC Bend Easing (option to DR currently being pursued)
 - ▶ HSC Bayport/Barbours Terminals
 - ▶ HSC Galveston Bay and Galveston Entrance Channel
 - ▶ Galveston Extension
- FY 15 ERDC R&D Coordination: Advance foundational technical studies for study suite via CRADA funded directly to ERDC by non-Federal sector
- FY 15/16/17 Budget: Initiate 3x3x3 priority feasibility studies





Gulf Intracoastal Waterway

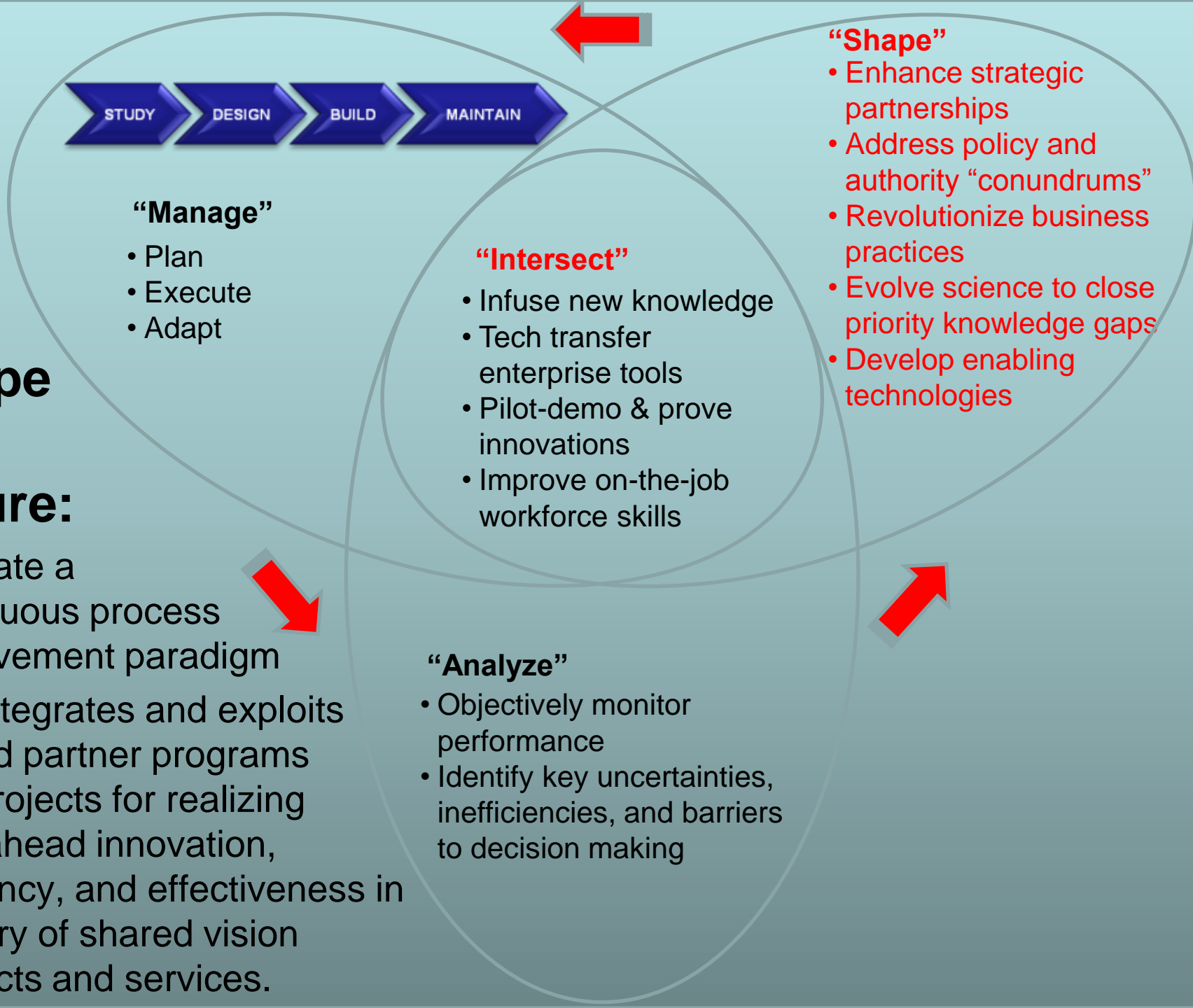
- FY 15 Work Plan:
 - ▶ Execute Sec 216 Project Partnership Agreement (PPA) and studies for Brazos River Flood Gates Modernization
 - ▶ Sign MOU and advance Planning Assistance to States (PAS) transportation economics analysis for 12 ft channel O&M restoration
- FY 16-17 Budget: Amend Sec 216 PPA:
 - ▶ Study for integrated coast wide innovative foreshore protection and channel O&M BU placement



BUILDING STRONG®

Shape the Future:

Cultivate a continuous process improvement paradigm that integrates and exploits related partner programs and projects for realizing leap-ahead innovation, efficiency, and effectiveness in delivery of shared vision products and services.





Shape the Future: Enhancing Strategic Partnerships

- Texas coast shared visioning for alignment of agency values toward mutually desired outcomes
 - ▶ Healthy, diverse, and functional ecosystems
 - ▶ Resilient and sustainable communities
 - ▶ Vibrant regional and national economy
- Driving progress through regularly-engaged organizational leadership framework
 - ▶ Multi-agency participation (Local, State, Federal)
 - ▶ Shared vision steering
 - ▶ Identifying / resolving barriers to progress
- Team building, collaboration, and unified communications
 - ▶ Articulating challenges and successes
 - ▶ Building stakeholder awareness and support for action
 - ▶ Supporting elected officials with information they need



BUILDING STRONG®



Shape the Future

- Identify and address policy/authority “conundrums”
 - ▶ Streamline the planning model certification process for congruency with SMART Planning constraints
 - ▶ Streamline review times and read-ahead provisions
 - ▶ Increase understanding and focus of DQC vs. ATR according to respectively intended purposes
- Revolutionize business processes
 - ▶ Times have changed: Ask interested and affected communities/businesses to contribute more than before so we can effectively support them via USACE missions under SMART Planning constraints
 - ▶ Partner with ERDC under their unique authorities for conducting technical studies in cooperation with non-Federal interests to explicitly inform the 3x3x3 study process beyond its limitations



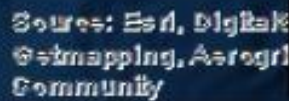


Shape the Future

- Evolve science to close priority knowledge gaps
 - ▶ Engineering with Nature
 - ▶ Regional Sediment Management
 - ▶ Conservation Planning
- Develop enabling technologies
 - ▶ Integrate/apply enterprise tools for leap-ahead decision support capabilities
 - ▶ Pilot demo field testing/refining of innovative solutions to redefine traditional technical practices for increased efficiency and effectiveness



BUILDING STRONG®





GIWW Erosion

Problems

- Erosion causes increased shoaling in the channel
- Erosion affects fresh water marshes in some areas
- Location of erosion control can be an issue
- Rock breakwaters are not compatible with barge navigation
- No opportunity for ingress/egress of aquatic organisms

Potential Solutions

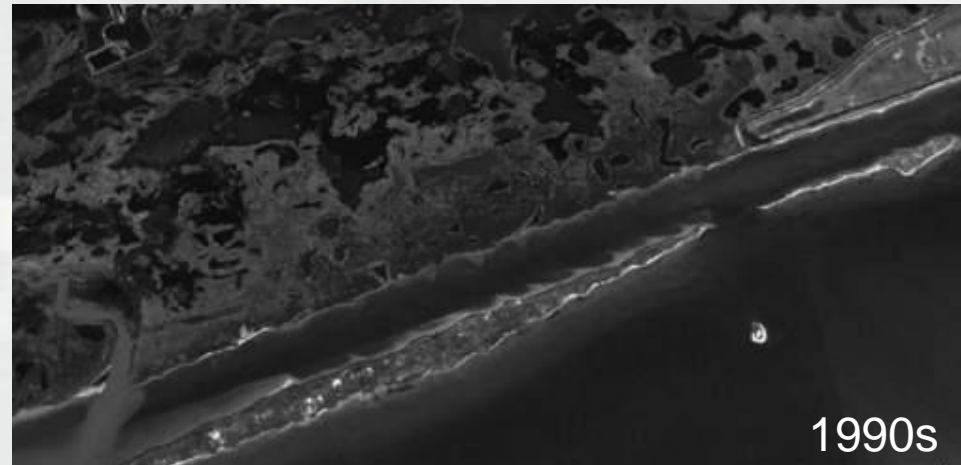
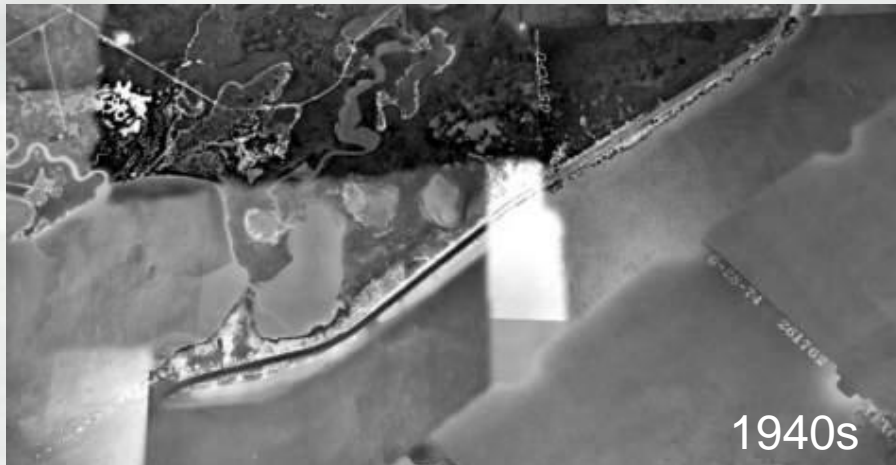
- Needs to be low cost
- Effective
- Stays in place
- Can be seen
- Maximizes ecosystem benefits



**Shoreline Protection –
GIWW in Jefferson Co (courtesy TNC)**



GIWW Erosion



**GIWW Islands – West
Galveston Bay**



**GIWW – Matagorda
Bay at Mad Island**



BUILDING STRONG®



Sargent Beach

Problems

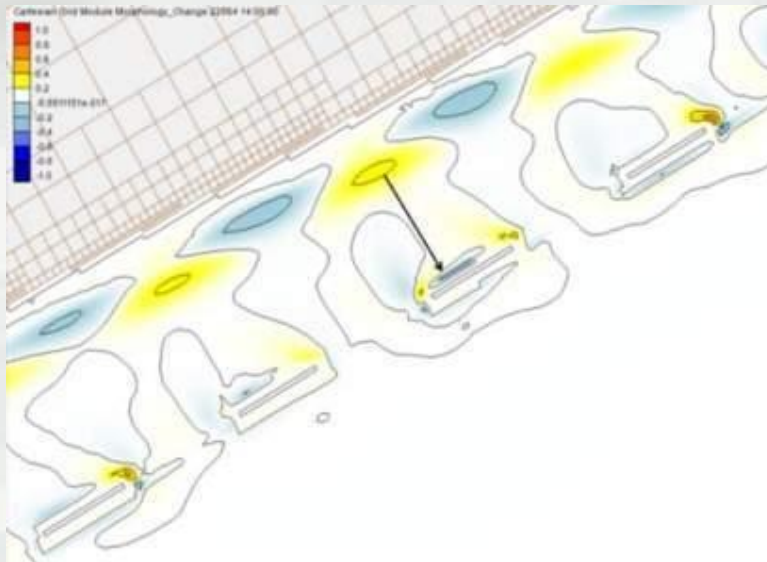
- Existing 8-mile long revetment was built along shoreline to protect the GIWW from land breaching
- Revetment is in imminent danger of being exposed to continuous wave action
- Beach sediments include silts and clays



BUILDING STRONG®



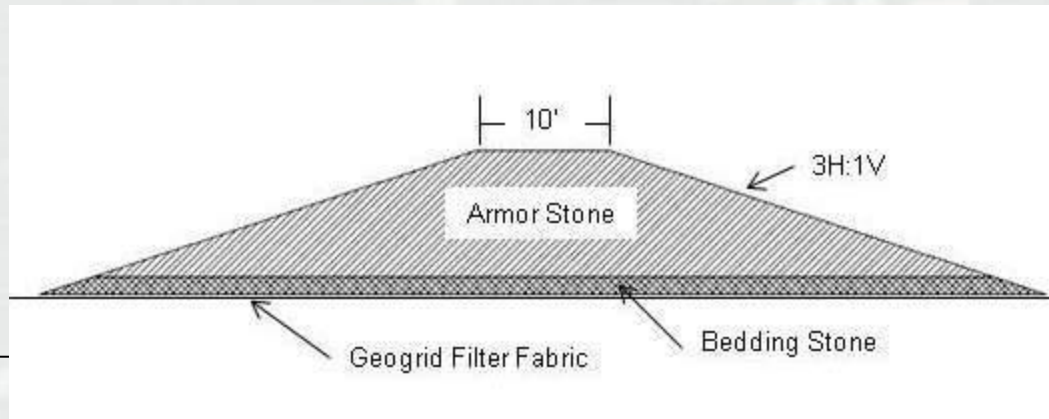
Sargent Beach



Potential Solutions

- Studied under PAS Authority
- Recommendation:
 - ▶ Construction of segmented shore parallel breakwaters
 - ▶ Build smaller demonstration projects, then monitoring performance and revising structure design
 - ▶ Limited beach fill

Is there more environmentally friendly way to design this structure?



BUILDING STRONG®



Brazos River Gulf Shoreline Erosion



BUILDING STRONG®



Brazos River Gulf Shoreline Erosion

Problems

- Gulf shoreline erosion at Surfside 4 ft/yr (historical) and 11 ft/yr (recent)
- Diversion of Brazos River redirected sediment 6 miles down the coast
- Collapse of relict Brazos River delta allows higher wave energy to attack the shoreline
- Longshore sediments (averaging 20% sand) are captured by Freeport Harbor entrance channel, and removed from longshore system by disposal in Ocean Dredged Material Disposal Site
- Real estate values of Surfside Village residences not high enough to support traditional beach nourishment project and



BUILDING STRONG®



Brazos River Gulf Shoreline Erosion

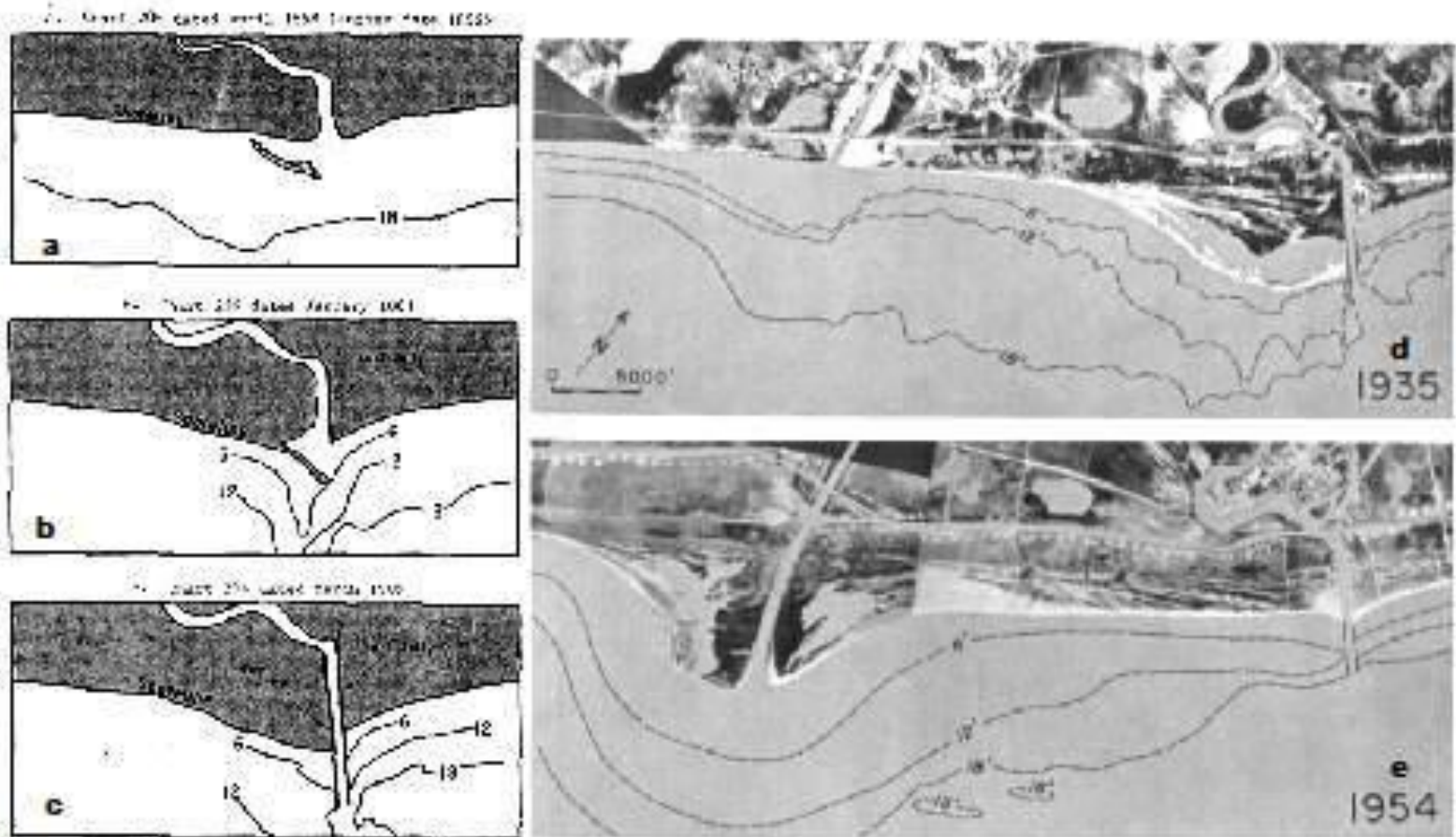


Figure 2. Historical morphology of the Freeport Entrance and Brazos River from Seeling and Sorensen (1973) and Watson (2003). (a) through (c) show the formation of the rapid pro-gradation of Brazos Delta from 1852 to 1909, and (d) and (e) shows the rapid degradation of the original delta and simultaneous pro-gradation of the delta at the relocated Brazos River mouth.

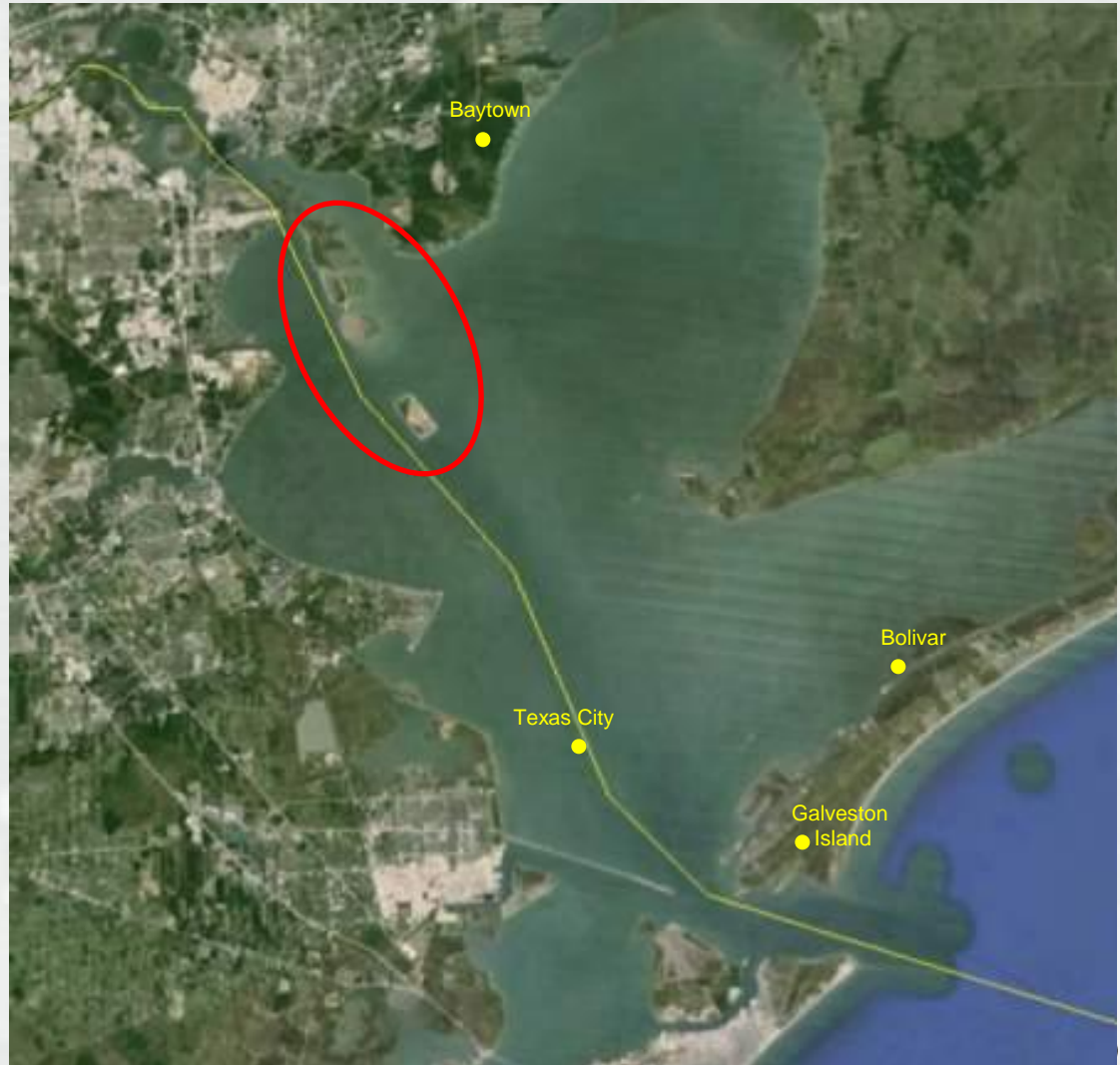




Houston Ship Channel

Problems

- Limited placement area capacity for existing projects
- Future expansion would require additional placement capacity solutions
- Limited opportunity for expansion of disposal facilities in the Bay





Houston Ship Channel



Potential Solutions

- Engineer confined disposal facilities (CDFs) in a cost-effective environmentally acceptable and/or beneficial manner
- Engineer beneficial use (BU) sites so that they maximize capacity and environmental benefits in a more cost-effective manner
 - ▶ Wetland creation
 - ▶ Open water thin layer placement



BUILDING STRONG®



Houston Ship Channel

Engineering Considerations for Future CDFs and BU sites:

- Poor bay bottom foundations (most of the middle and lower bay bottom is soft)
- Deep bay waters (10-12 feet)
- High fetch and wave energy
- Effects of ship wake
- Oyster impacts
- Minimal impacts to bay circulation and salinity
- Influences on sedimentation in the channel
- Potential benefits to CSDRM





SWG-EWN Implementation Challenges and Opportunities

- How can we strategically employ EWN principles to:
 - ▶ Restore/sustain critical coastal land features that reduce adverse impacts of wave energy and/or sedimentation on navigation and CSDRM features?
 - ▶ Conserve sensitive coastal wetlands from breakthrough/exposure with increased coastal hydrodynamics and associated elevated salinity regimes with storms/RSLR?
 - ▶ Create/sustain multiple lines of coastal defense in the vicinity of low-lying coastal communities/infrastructure?



BUILDING STRONG®



SWG-EWN Implementation Challenges and Opportunities

- How can we effectively/efficiently/productively reuse new work and maintenance dredging materials from navigation channels to build:
 - ▶ General Navigation features?
 - ▶ Flood Risk / Water Management features?
 - ▶ Ecosystem Restoration features?
- What EWN synergies/innovations could provide for reduced maintenance requirements for constructed features?



BUILDING STRONG®



SWG-EWN Implementation Challenges and Opportunities

- What are the required environmental river flows for ensuring ecological health of coastal bays/estuaries in context of existing/future potential upstream uses?
- With regard to aging coastal structure recapitalization (e.g., Brazos River Flood Gates), how can we use EWN principles to achieve current/projected navigation and FRM requirements at systems-scale to sustain ecosystem restoration and management needs on the coast (e.g., integrity of Brazos and San Bernard River deltas)?



BUILDING STRONG®



SWG-EWN Implementation Challenges and Opportunities

- How will potential EWN actions incorporated into projects, coordinated on a regional scale from a portfolio perspective, become an enabler to:
 - ▶ Conserve natural resources?
 - ▶ Avoid/minimize environmental mitigation requirements?
 - ▶ Reduce lifecycle project costs?
 - ▶ Minimize construction timeframes?
 - ▶ Enhance overall quality/quantity/distribution of project outputs?



BUILDING STRONG®

CONNECT WITH US!



ON FACEBOOK

www.facebook.com/GalvestonDistrict



ON TWITTER

www.twitter.com/USACEgalveston



ON YOUTUBE

www.YouTube.com/GalvestonDistrict



ON DVIDS

www.dvidshub.net/units/USACE-GD



ONLINE

www.swg.usace.army.mil



BUILDING STRONG®



Additional SWG Program Information



BUILDING STRONG®



Sabine Pass to Galveston Bay

- FY 15 Work Plan: Initiate Brazoria and Jefferson Counties ER 3x3x3 Interim General Investigation (GI) Feasibility Studies (FSs)
- FY 15-16 Budget: Complete Brazoria and Sabine Regions Coastal Storm Damage Risk Management (CSDRM) GI Chief's Report
- FY 16-17 Budget: Complete Brazoria and Jefferson Counties Ecosystem Restoration (ER) 3x3x3 GI Interim FSs



BUILDING STRONG®



Sabine-Neches Waterway

- FY 15 Work Plan: Update economics, update Sec 902 analysis, amend Design Agreement (DA), advance Pre-Construction, Engineering, and Design (PED), and create MOA on NF risk of non-reimbursement
- FY 15/16/17: Cultivate and advance Public-Private Partnership (P3) Pilot Project via IWR Program funds



BUILDING STRONG®



Freeport Channel Improvement

- FY 14: Complete White Paper with view towards Limited Reevaluation Report (LRR) approval
- FY 15 Work Plan: Sign approved DA, initiate LRR, and begin PED
- FY 16-17 Budget: Complete LRR, PED, and first set of P&S



BUILDING STRONG®



Corpus Christi Channel Improvement

- FY 15/16/17 Budget: Amend/execute Project Partnership Agreement (PPA), evaluate for LRR (barge lane & main channel widening), and advance PED
- FY 16/17/18 Budget: LaQuinta Channel FS (52 ft depth)



BUILDING STRONG®



Brazos Island Harbor

- FY 16 Work Plan: Develop/execute DA, Advance PED, first set of P&S



BUILDING STRONG®



Brownsville Resacas

- Boulevard Resaca
 - ▶ FY 15 Work Plan: Continuing Authorities Program (CAP) ER Study (based on FY 14 executed Feasibility Cost Share Agreement, FCSA)
- Resacas System
 - ▶ FY 16-17 Budget: Remaining Features ER FS (Continuation)



BUILDING STRONG®



Houston Bayou Network

- White Oak Bayou (Sec 211f Reimbursement)
 - ▶ FY 15/16/17 Budget: PPA cost reimbursement, audits for completed work and Lands, Easements, Relocations, Rights-of-Way, and Disposal (LERRDs) evaluation
- Hunting Bayou (Sec 211f Reimbursement)
 - ▶ FY 15/16/17 Budget: PPA cost reimbursement, audits for completed work and LERRDs evaluation
- Sims Bayou FRM & Recreation (Const General (CG) Cost Share Balance)
 - ▶ FY 15: Complete Hike & Bike Trail construction
 - ▶ FY 16-17: FRM and Recreation project fiscal closeout
- Brays Bayou (Sec 211f Reimbursement)
 - ▶ FY 15 Budget & Work Plan: Cost reimbursement, completion of discrete segment construction
 - ▶ FY 15 Work Plan: Will request additional catch up reimbursement funds for completed work

Addicks & Barker Dam Safety Mega Project

- ▶ FY 15/16/17 Budget: Perform outlet structure permanent rehabilitation





Interagency and International Support (Reimbursables)

- International Boundary Water Commission
 - ▶ FY 15: Rio Grande River Levee Failure Analyses and Rehabilitation Recommendations
 - ▶ FY 16-17: Rio Grande River Systems Performance Evaluation
- Customs and Border Protection
 - ▶ FY 15: Command and Control Projects, 35% design, Falfurrias Check Point
 - ▶ FY 15/16: Freer Border Patrol Station (potential)
- Immigration and Customs Enforcement
 - ▶ Border Fence (potential)
- Maritime Administration
 - ▶ Sabine-Neches Waterway MARAD Ship Fleeting Area Improvements
- Lower Neches, Trinity, Brazos, and Colorado Rivers PAS
 - ▶ FY 15 Work Plan: Watershed performance assessments

