Mobile Bay National Estuary Program
Project Implementation Committee

March 30, 2023, 1:00 pm – 3:00 pm
Five Rivers Tensaw Theater

Agenda

Meeting Objectives:

a) Share updates on ongoing and proposed planning activities in coastal Alabama
b) Other project status updates

1. **Welcome and Introductions**
   PIC Co-Chairs:
   Judy Haner, The Nature Conservancy
   Patric Harper, U.S. Fish & Wildlife Service

2. **Review and Approval of Minutes**

3. **Old Business**
   a) Management Conference Committee Status Updates

4. **New Business**
   a) Updates on Planning Activities in Coastal Alabama
      a. Watershed Management Plan Assessment – Chris Warn, Environmental Science Associates
      b. Comprehensive Conservation Management Plan & State of the Bays and Coast – Roberta Swann, MBNEP
      c. Mobile Tensaw Apalachee WMP – Tim Thibaut, Barry Vittor and Associates
      d. Dauphin Island WMP – Chris Warn, Environmental Science Associates
      e. Western Shore Shoreline Management Plan – MBNEP
      f. Regional Sediment Management/Beneficial Use Opportunities – Don Mroczko, US Army Corps of Engineers
   b) MBNEP Restoration Update (if time allows)
   c) Off-cycle topical meeting – anything interesting before oyster season later in 2023?
   d) Next meeting **TBD**

5. **Adjourn**

Project Implementation Committee Meeting – March 2023

Please sign-in out in the hallway

This presentation provides minutes of the March 30, 2023, Project Implementation Committee. Additional notes are added as needed.

Attendees: Kelley Barfoot, Cassie Bates, Don Bates, Aubrey Bianco, Madison Blanchard, Mary Kate Brown, Herb Bullock, Kelsey Carpenter, Emma Cochran, Christine Cooley, Annelise Dodd, Walter Ernest, Benji Elmore, Rebekah Farmer, Leslie Gahagan, Jenn Greene, Judy Haner, Rob Howell, Patric Harper, Shae Holley, Mary Brandon Huettemann, Webb Jackson, Jeremiah Kolb, Ken Leslie, Shannon McGlynn, Eliska Morgan, Don Mroczko, David Newell, Autumn Nitz, Ryan Peek, Will Pentecost, Justin Rigdon, Sawyer Shotts, Lance, Slater, Tim Thibaut, Lee Walters, Chris Warn

MBNEP Staff: Jason Kudulis, Marti Messick, Christian Miller, Roberta Swann

Project Implementation Committee Agenda

Welcome and Call to Order:

Co-Chairs: Judy Haner, The Nature Conservancy, & Patric Harper, U.S. Fish and Wildlife Service

Review and approval of November 2022 minutes

Old Business:

Management Conference Committee Updates

New Business:

- Planning Activities and Updates
- MBNEP Watershed Planning and Project Implementation Updates
- Next Meeting TBD

The meeting was called to order at 1:04pm.

Minutes from the November 2022 meeting were distributed for review prior to the meeting. Chris Warn motioned to accept the minutes; Mary Kate Brown seconded the motion.

Old Business: MBNEP staff provided updates for the other Management Conference committees.

- The Community Action Committee met on March 22. They discussed goals and objectives of CAC and methods to increase committee growth as well as retention of new and current members. The committee talked about bringing in fresh ideas for meetings and not focusing solely on water monitoring.
- The Business Resources Committee toured Admiral Oyster Company recently to learn more about the aquaculture industry and the potential to become a major sustainable seafood industry on the coast.
- The Science Advisory Committee is scheduled to meet April 6.
    - Wrapping up and summarizing changes in responses to the stressor matrix (2012-2022)
    - Discussing 20 Questions feedback from Bays and Bayous
    - Launching into *State of the Bay*
    - Evaluating indicators used in the 2008 publication and discussing emerging topics

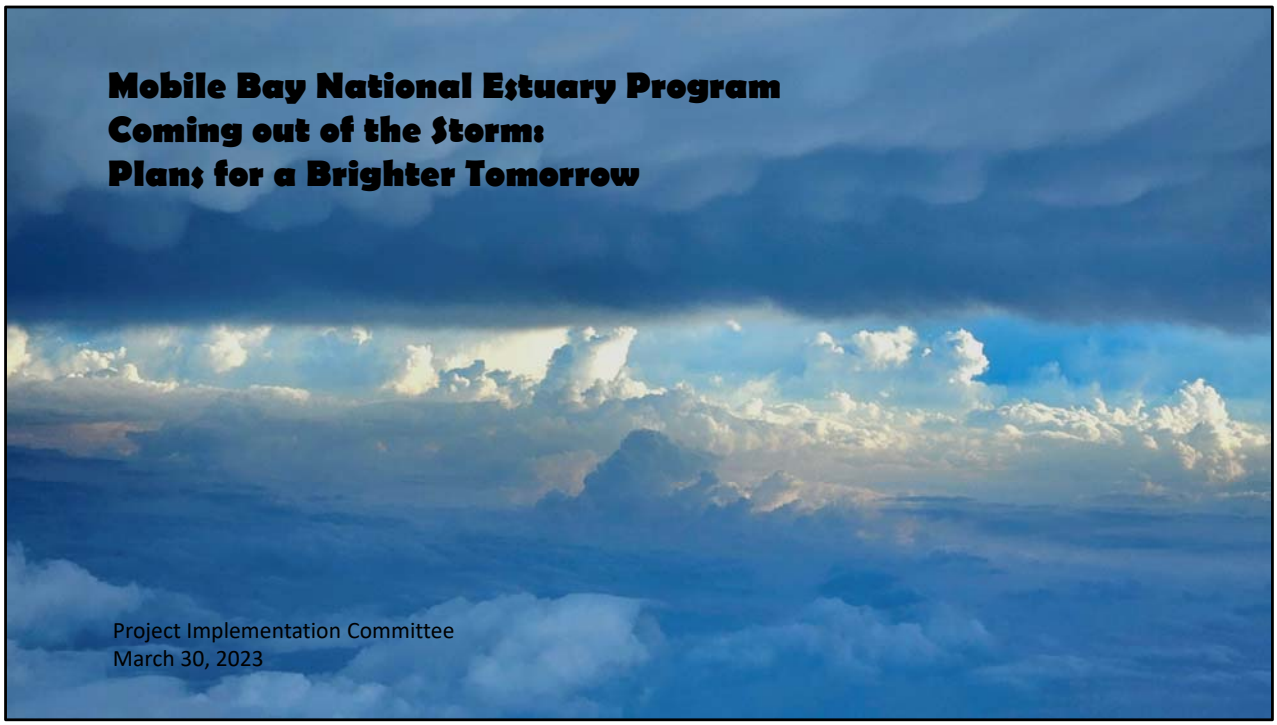
to include in this iteration of the document

- The Government Network Committee will meet on March 31.

New Business:
The agenda included coastal Alabama planning initiatives/activities and updates. Speaker slides are shared as presented and supplemental notes are included as needed.

Project Implementation Committee Agenda

- Coastal Alabama Planning Activities
  - CCMP, State of the Bay, and Infrastructure Action Plan – Roberta Swann, MBNEP
  - Watershed Management Plan Assessment – Christian Miller, MBNEP
  - Mobile Tensaw Apalachee WMP – Tim Thibaut, Vittor and Associates
  - Dauphin Island WMP – Chris Warn, Environmental Science Associates
  - Western Shore Shoreline Management Plan – Jason Kudulis, MBNEP
  - Regional Sediment Management/BU Opportunities – Don Mroczko, USACE

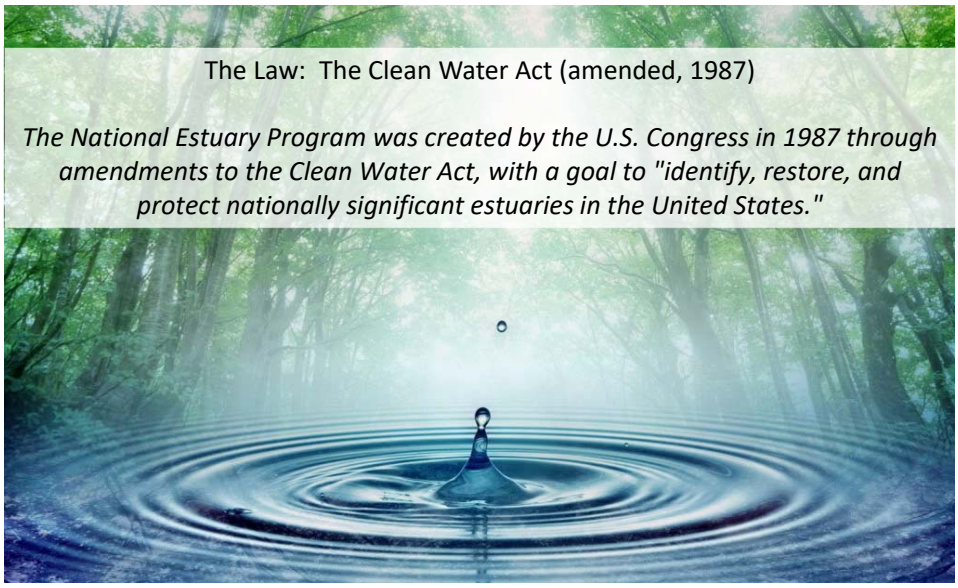


MBNEP Director, Roberta Swann provided updates on planning for a new Comprehensive Conservation Management Plan (CCMP), State of the Bay Report, and MBNEP's plan for Bipartisan Infrastructure Law funding the program received.

Key takeaways:

- MBNEP has several mission multi-year critical planning initiatives kicking off in 2023.
    - Assessment/synthesis of all watershed plans completed to date.
    - Current CCMP evaluation and rewrite process.
    - Development of a State of the Bay and Estuaries Report.
    - Action Plan for implementation of BIL funds awarded to NEPs.

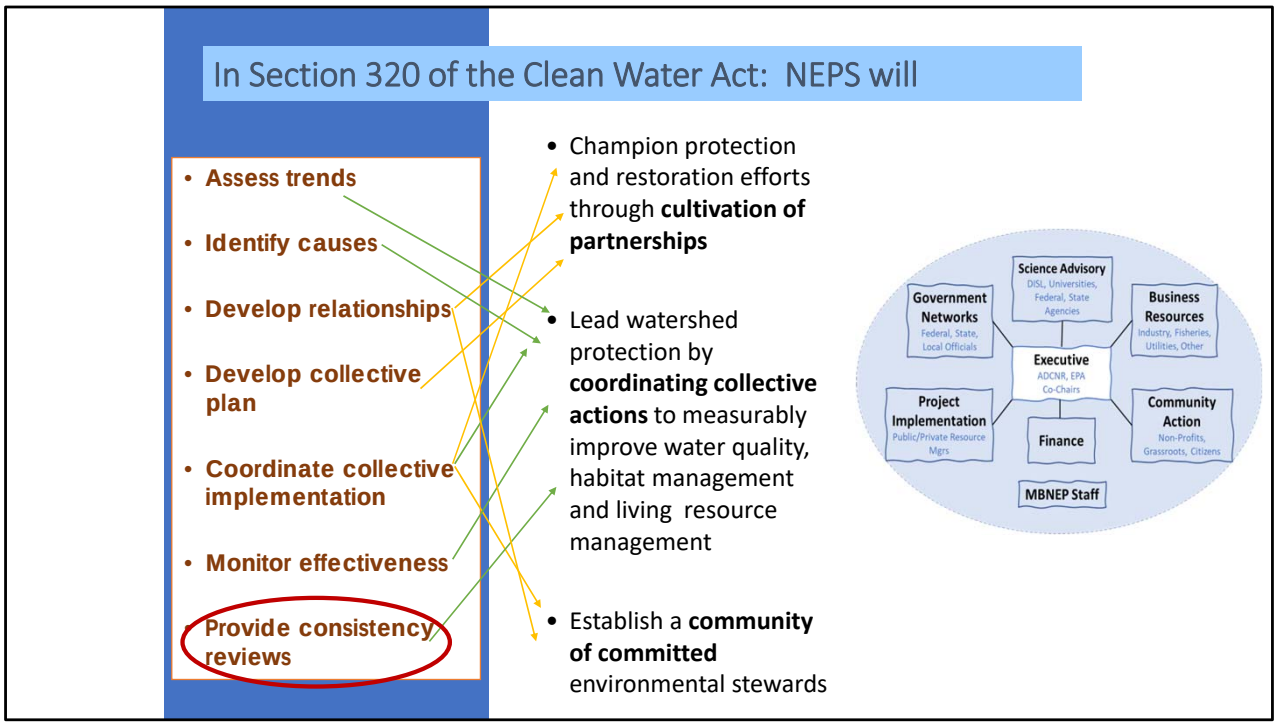
NEPs: The Federal Perspective



To restore and maintain
the chemical and biological
integrity of the Nation's Waters
so that they can support
the protection and propagation of
fish, shellfish, wildlife and recreation in and on the water…

The original goal of the Clean Water Act was to eliminate the discharge of untreated wastewater from municipal and industrial sources and thus make American waterways safe for swimming and fishing.

When reading the historical discussions leading up to enactment of the CWA, this act established a principle that when somebody uses water, it should be returned at least in the same or better condition, hence the goal of the Act: To eliminate all water pollution by 1985. The 1987 amendment created the National Estuary Program model.



The charge for national estuary programs as outlined in Section 320 of the Clean Water Act are in the left column. The collective plan being the Comprehensive Conservation Management Plan (CCMP). The collective implementation being all the great work done by the entire Management Conference that meets or incorporates conservation management strategies of the CCMP – a constituent-driven plan. Rather you service on the Project Implementation Committee or any Management Conference committee, you are the MBNEP.

We work to achieve collective impact by creating a common agenda, collecting data on a regular basis and then synthesizing it to improve management efforts, coordinating and collaborating on restoration projects, communicating actions through committee meetings, networking at meetings/conferences like this, and through social media. Staff provide steady support and fill in gaps when needed, the MBNEP – not any one person or organization can do everything. Together we can do much more.

We are collectively focused on protecting six things people (identified in development of the CCMP) value most about living on the Alabama coast.

Access to the water and open spaces
Sustainable beaches and shorelines
Robust populations of fish and wildlife
Conservation of our community's heritage and cultures
Environmental and community resilience
Continuous improvement of water quality for fishing and swimming

The CCMP Re-Write Road Ahead

Year	Target Date	Activity
2023	March 31	Watershed Assessment
	May 31	CCMP Evaluation
	June 30	Stressor Evaluation Technical Report
	December 31	Community Outreach Phase One
2024	January 31	MC Organizational Assessment
	March 31	**State of Alabama's Estuaries and Coast**
	December 31	Outreach Phase Two
2025	June 30	CCMP Re-Write: Strategy Development
	August 31	CCMP Out for Public Comment
	September 30	CCMP Finalization and Approvals
	October 1	Begin Implementation

Timeline for development and publication of MBNEP organizational products.

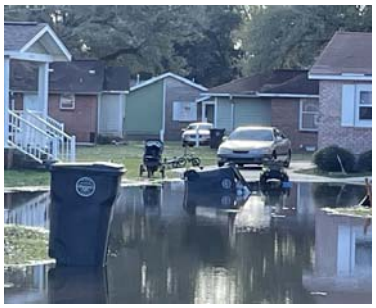
BIL Infrastructure 5-Year Framework/Two Year Action Plan

What are EPA Priorities ?

- Tackle the Climate Crisis
- Advance Environmental Justice and Civil Rights

How will MBNEP BIL Dollars be used ?

- Environmental monitoring
- Shoreline stabilization and resilience
- Green infrastructure in underserved areas



Each of the 28 NEPs received funding from the Bipartisan Infrastructure Law (BIL) to implement projects. MBNEP will use this funding for:

- **Environmental monitoring**
  to track climate related changes in pollutant loading and contamination.
- **Shoreline stabilization and resilience**
  to strengthen our first line of defense against climate related impacts.
- **Green infrastructure in underserved areas**
  to counter chronic flooding/other stormwater management challenges facing disadvantaged communities.

Year 1 & 2: EST- 1 Environmental Monitoring Projects $ 75,241

Middle Bay Light House Monitoring Infrastructure- ARCOS

- One of the oldest (2005) real-time monitoring stations
- Taken down in Hurricane Sally
- Necessary to track changes in water quality as seas rise and climate changes
- Beacon for changes in
  - ***Water temperature***
  - ***Salinity***
  - ***Dissolved oxygen***
  - ***Turbidity***
  - ***pH***
  - ***Total chlorophyll***

- **Environmental monitoring**

  to track climate related changes in pollutant loading and contamination.

Year 1 & 2: EST- 1 Environmental Monitoring Projects $ 100,000

Watershed Environmental Monitoring- Pilot in Baldwin County?

- Need for focused environmental monitoring to respond to
  - Watershed plan concerns/priorities
  - Citizen concerns
  - Climate related changes in pollutant loads
- Expand ADEM reach
- Opportunity to pilot new ways of collecting data/engaging citizens
- Integration into EPA's ***How's my Waterway*** online visualization tool

- **Environmental monitoring**
  to track climate related changes in pollutant loading and contamination.

Year 1 & 2: ERP- 3 Shoreline Resilience Program $ 225,000

Shoreline Resilience Plan for Western Shore

- Identified as need in Watershed Management Plan
  - Coastal erosion
  - Flooding/sea level rise
  - Habitat loss
- Need for additional science related to freshwater discharges from Mobile River, wave climate analyses, salinity changes, nature-based technologies
- Ongoing engagement with Western Shore Property owners with broad willingness to participate
- Grant application to NFWF- NCRF Awarded. $575,000
- **Excess funding will be reprogrammed to Shoreline Cost Share Program**

- **Shoreline stabilization and resilience**
  to strengthen our first line of defense against climate related impacts.

Year 1 & 2: ERP- 3 Shoreline Resilience Program $ 250,241

Shoreline Resilience Cost Share Program Pilot

- Funding to support private extents of shoreline stabilization
- Program will be developed with participation from stakeholders and other resource managers
- Opportunity to manage system based on natural resource need vs. individual need
  (Focus on identified priority shoreline extents vs. singular private property)

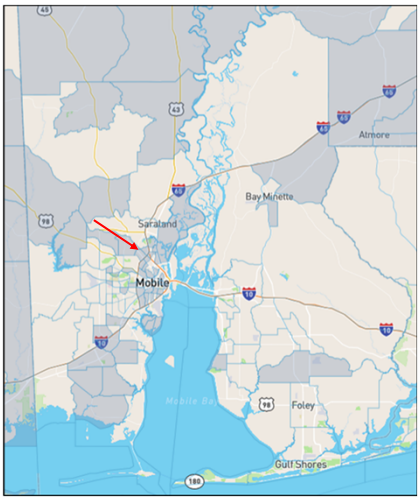
Shoreline Resilience Project Delivery at 50% FTE/2 years $ 94,482

- **Shoreline stabilization and resilience**
  to strengthen our first line of defense against climate related impacts.

Years 1 & 2 TAC-4 Justice40 Green Infrastructure Initiative $ 250,000

Eight Mile Creek Watershed Restoration
$ 150,000/$100,000

- Falls within Justice40 Map
- Update of Watershed Plan published in 2011
- Focus on reduction of Pathogen pollution with goal to delist from State Impaired Waters list
- Promotion of green infrastructure technologies in an underserved area
- Opportunity to elevate environmental protection as a community growth initiative



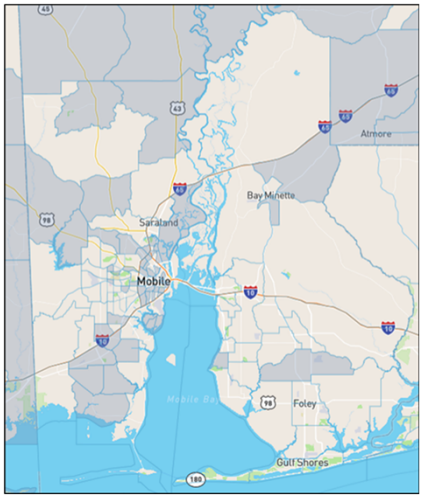
- **Green infrastructure in underserved areas**

to counter chronic flooding/other stormwater management challenges facing disadvantaged communities.

Year 1 & 2 TAC-4 Justice40 Green Infrastructure Initiative $ 500,000

Justice40 Green Infrastructure Program

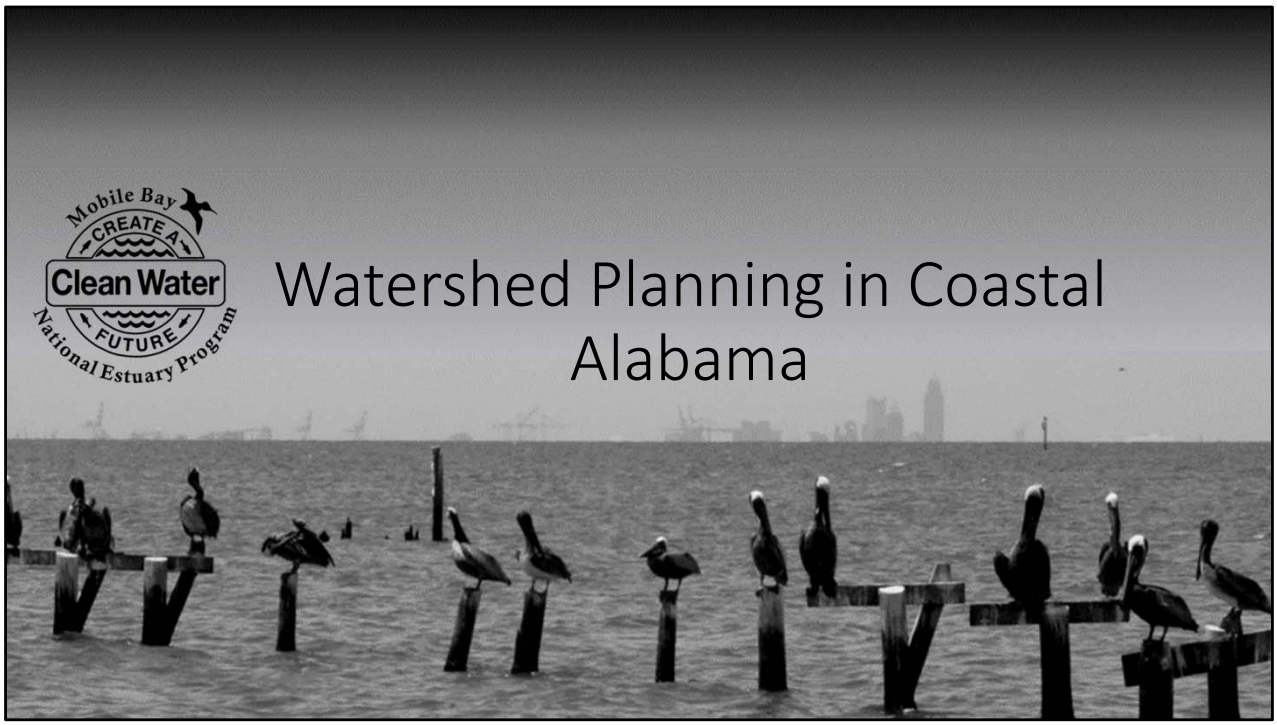
- Available to areas **within Justice40 Map**
- MBNEP will recruit **local government, public housing authorities**
- **MBNEP will lead project development** and implementation where necessary
- Opportunity to **elevate environmental protection** as a community growth initiative
- Potential **national model** for incorporating EPA Environmental protection into HUD Public Housing/CDBG community development programs



Justice40 Green Infrastructure Project Delivery at 50% FTE $ 87,256

- **Green infrastructure in underserved areas**

to counter chronic flooding/other stormwater management challenges facing disadvantaged communities.

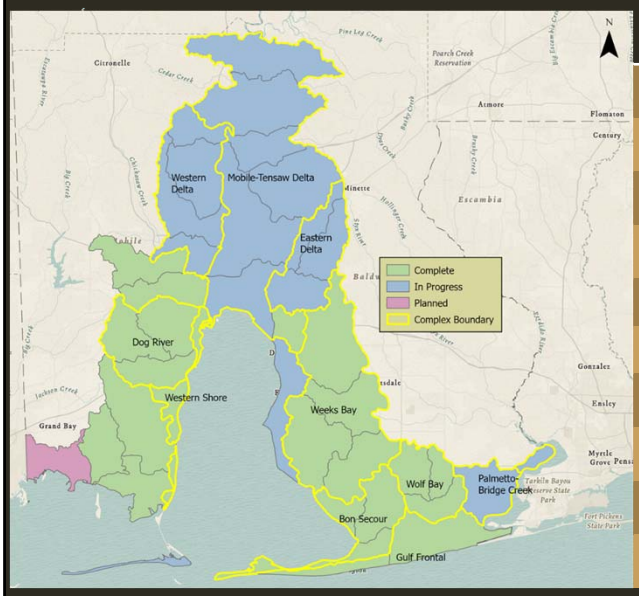


Christian Miller with MBNEP presented on watershed management planning activities.

Key takeaways:

- MBNEP is undertaking a watershed plan assessment/synthesis of all plans completed to date to guide future MBNEP program development in response to common needs and recommendations identified in coastal WMPs.
    - This should be completed in May and will additionally inform the CCMP assessment and rewrite.

Watershed Planning Update



Watershed	Status
Western Shore	Complete
Gulf Frontal	Complete
D'Olive Update	Complete
MTA Delta	Wrapping Up
Eastern Shore	Wrapping Up
Dauphin Island	Wrapping Up
Perdido	In Progress
Western Delta	In Progress
Eastern Delta	In Progress
Grand Bay	On Deck

We are coming to the tail end of the initial watershed planning process. Only Grand Bay remains from this first round. We expect updates to the original plans after a period as was done D'Olive.

WATERSHED PLAN ASSESSMENT

PIC has been guiding WMP development & Implementation since 2010

PIC Prioritized watersheds for 2013-18 CCMP

2019-23 CCMP – finishing up WMPs for intertidal watersheds

With a new CCMP on the horizon… Focus turning to implementation

Watershed Plans	WMP Funding Source	Date of Publication
D'Olive, Tiawassee, Joes Branch	ADEM, EPA, MBNEP, MASGC, APCO, Baldwin County, Daphne, Spanish Fort	2010
Eight Mile Creek	MBNEP/MASGC/CWP	2011
Three Mile Creek	ADCNR, MAWSS, ADEM, Mobile County, MBNEP, EPA	2014
Fowl River	NFWF-GEBF	2016
Dog River Complex	NFWF-GEBF	2017
Bon Secour Complex	NFWF-GEBF	2017
Weeks Bay Complex	NFWF-GEBF	2017
Bayou La Batre	NFWF-GEBF	2018
West Fowl River	NFWF-GEBF	2019
Wolf Bay Complex	NFWF-GEBF/RESTORE	2021
Gulf Frontal Complex	RESTORE	2022
Mobile Tensaw Delta Complex	NFWF-GEBF/RESTORE	2023
Western Shore	RESTORE	2023
Fly Creek	RESTORE	2023
Dauphin Island	RESTORE	2023
Western Perdido Bay	RESTORE	2023
Eastern Delta	RESTORE	2024
Western Delta	RESTORE	2024
Grand Bay Swamp	RESTORE	2025

The watershed approach has been a focus of the MBNEP and the CCMP. The PIC played a large role in the watershed prioritization process and implementation of the plans.

Assessment is currently underway.

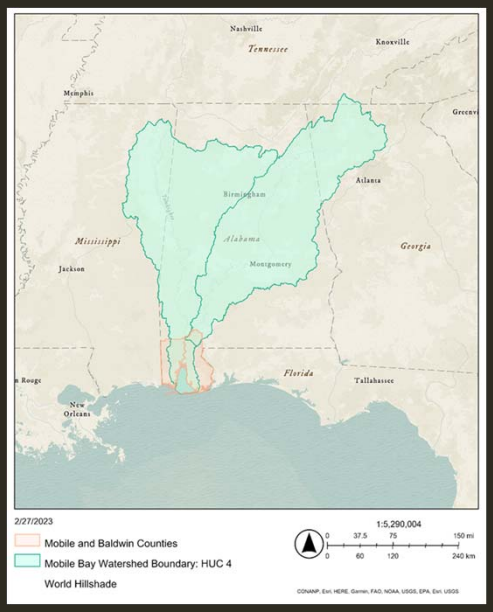
WATERSHED PLAN ASSESSMENT

Purpose – Guide future MBNEP program development in response to common needs and recommendations identified in coastal WMPs

Goals:

- **Improve delivery of service** in implementation of WMPs
- **Improve prioritization of investments** across watersheds to address greatest needs
- **Increase leveraging opportunities** by providing a strategic road map for improving environmental conditions across Coastal Alabama

This will be **foundational** in guiding development of next CCMP



ASSESSMENT COMPONENTS

Community Engagement

Critical Issues across all Watersheds

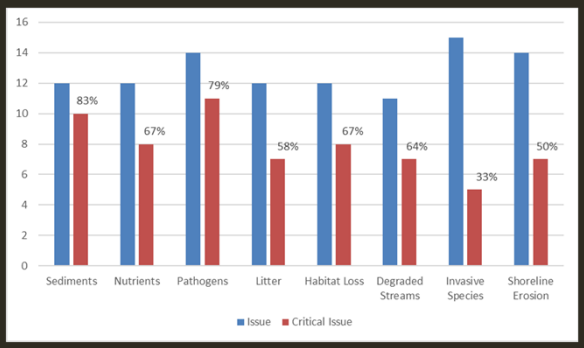
Status of Environmental Monitoring/Data

Status of Regulatory Environment

Recommended Management Measures

Financing Strategies

Role of MBNEP going into the next CCMP cycle



NEXT STEPS

Wrapping up Watershed Assessment – May

- WMP Assessment Document
- WMP Project Database

CCMP Assessment

- WMP Assessment will, in part, inform this process

Recommendations will inform development of upcoming CCMP

Mobile-Tensaw-Apalachee (MTA) Watershed Management Plan

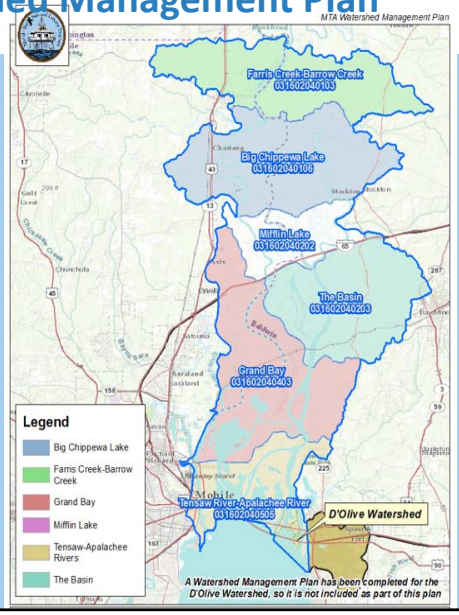
Tim Thibaut with Barry Vittor and Associates presented recommended management measures of the Mobile-Tensaw Apalachee Watershed Management Plan.

Key takeaways:

- The Mobile-Tensaw Apalachee Watershed Management Plan is almost complete.
    - Recommended management measure categories and specific examples are presented on the following slides.

MTA Watershed Management Plan

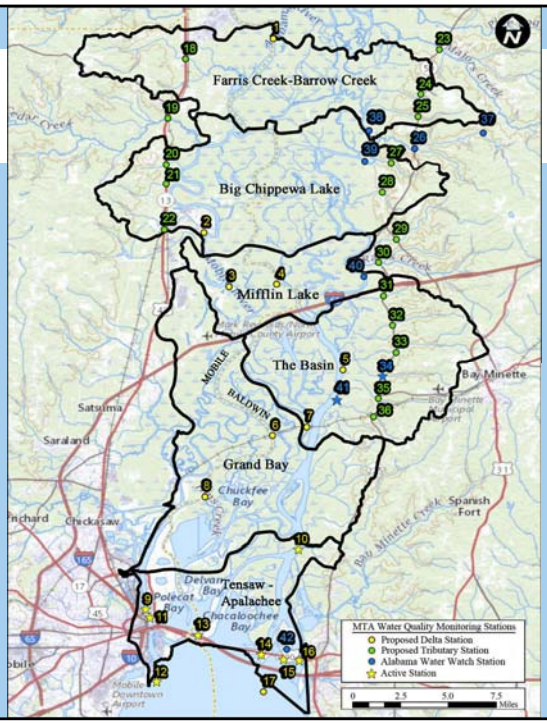
» Six HUC12 Watersheds comprise the MTA



Subsequent slides provide management recommendations by topic/subject matter and additional details/examples.

Improve Water Quality Monitoring

- Establish monitoring stations at strategic locations to track long-term variation in water quality
- Monitor inputs to the Delta and discharges to Mobile Bay
- Implement a citizen volunteer water quality monitoring program, to include residents and industries



Sites represent potential or recommended monitoring at strategic locations. All active monitoring is in the lower delta.

Only two active volunteer monitoring stations in this area.

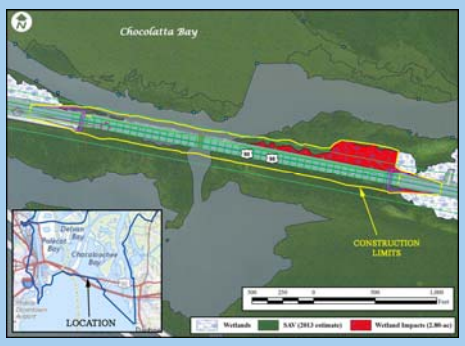
Improve Water Quality Modeling

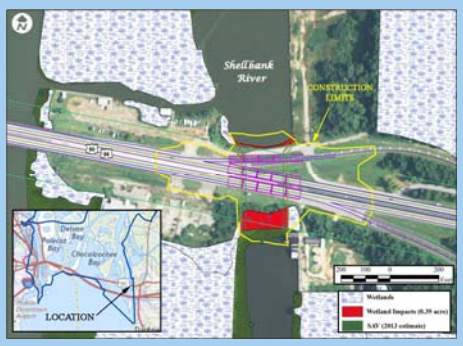
- Pursue funding to compile, organize, and distribute existing hydrologic and hydrodynamic datasets and models for use in future studies
- Pursue funding for a modeling effort that captures the complex interactions between surface water, groundwater, and tidal exchange to better understand the impacts of future climate, sea level rise, and land use/cover change

There are some models and datasets developed for the lower delta but unfortunately, they are not publicly available to use. If they were that would assist researchers understanding the system in a more complete. With limited funds it may be difficult to duplicate those products.

Enhance Hydrologic Connectivity at the Highway 90 Causeway

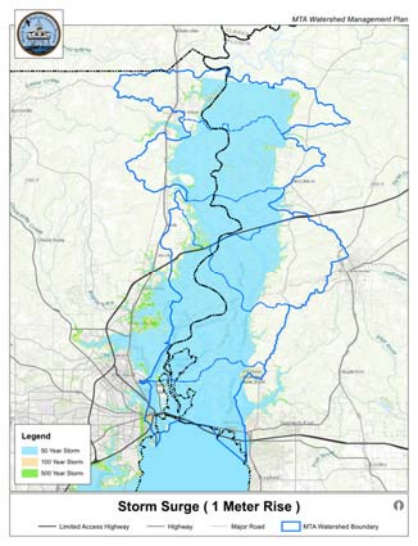
- Address data gaps remaining from the 2015 Feasibility Study for Causeway openings at Chocolatta Bay and Shellbank River
- Evaluate restoration alternatives with a cost logistics/feasibility frame of reference





Manage Sea Level Rise Impacts to the Natural and Built Environment

- » Produce a Sea Level Rise Adaptation Plan
- » Work with the USACE to identify opportunities to fund recommendations of the Plan through SACS or USACE Planning Assistance to States program

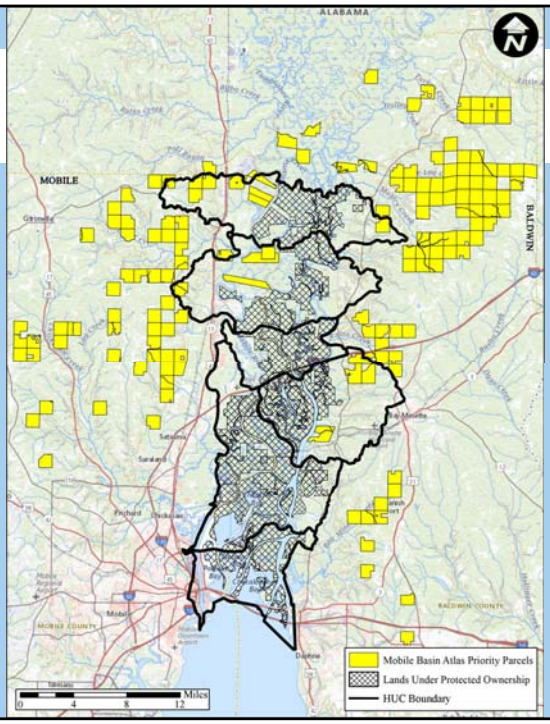


Strategic Habitat Acquisition

Priority parcels identified in the *Mobile Bay Basin Habitat Atlas* (2019)

Funded by: Healthy Watersheds Consortium Grant Program

» Work with the ADCNR, FWS, NOAA and other partners to identify opportunities to fund the parcel acquisition recommendations of this watershed plan



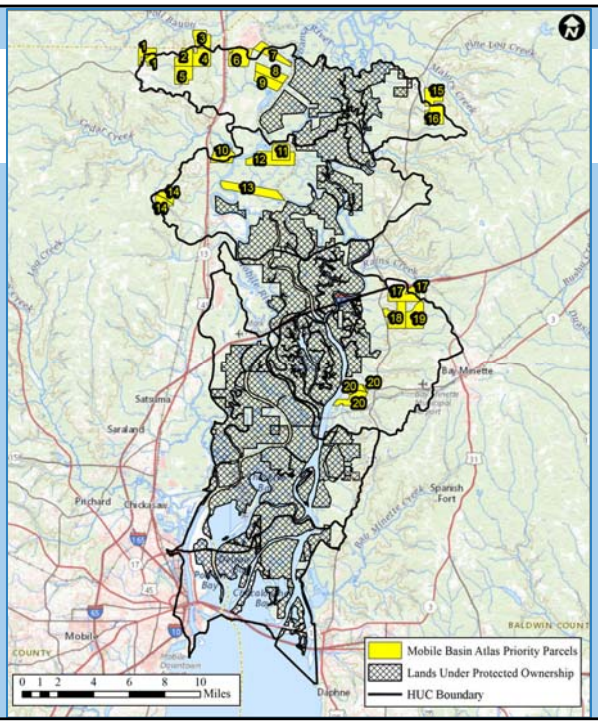
Parcels represent connectivity to the delta and are >500 acres for strategic acquisition. About 40% of the delta is already protected land.

Strategic Habitat Acquisition

Priority parcels identified in the *Mobile Bay Basin Habitat Atlas* (2019)

» Total Area of Parcels Within MTA: 13,665 acres

» Total Estimated Market Value (2019): $23,320,243.00

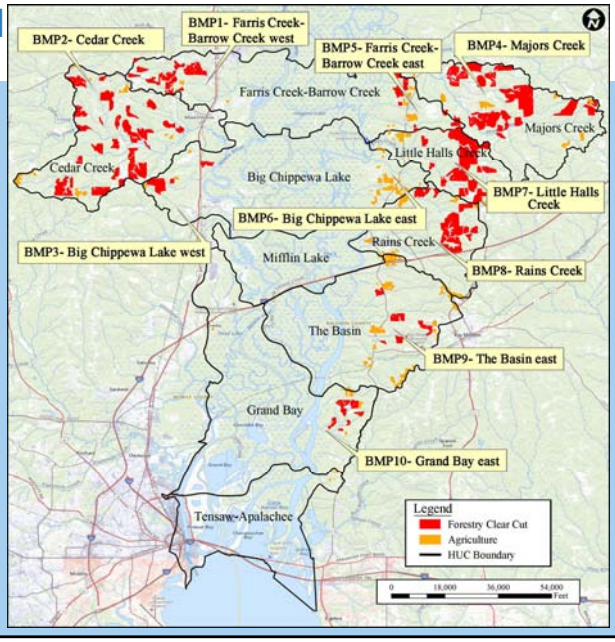


These 20 priority parcels are inside the watershed.

Technical report was produced in 2019 .
https://www.mobilebaynep.com/assets/uploads/main/MobileBayBasinHabitatAtlas_Final.pdf

Encourage More Use of Agricultural and Forestry BMPs

- » Assist landowners and leverage existing programs
- » Educate major key private landholders on voluntary Best Management Practices for riparian and forestry practices



Silviculture is a major industry in this watershed. Included these additional HUCs because they drain into the delta. Scale and breadth in undeveloped land use.

Address Tributary Stream Impairments

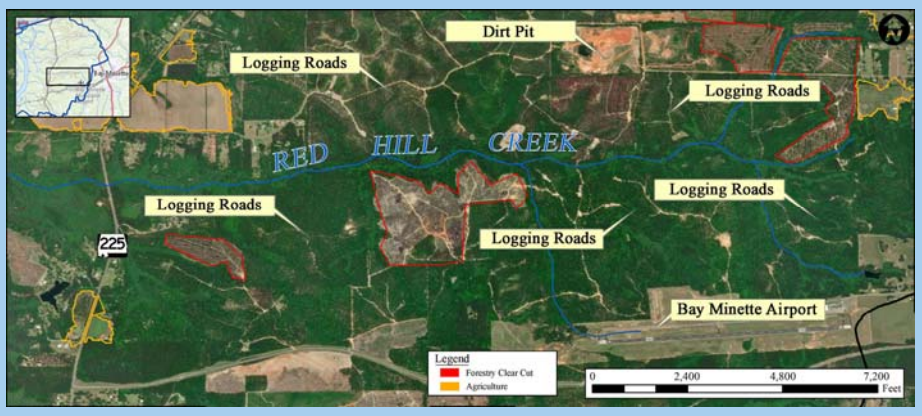
- » Reduce Sediment Producing Hotspots
  - Halls Creek
  - Aikin Creek
  - Dennis Creek
  - Red Hill Creek
- » Reduce Nutrient Producing Hotspots
  - Martin Branch
  - Dennis Creek
- » Reduce Pathogen Producing Hotspots
  - Halls Creek (303d)

Impaired Streams
(Poly, Inc. 2019)

Data was produced during the baseline water quality assessment. These reports are standard practice ahead of watershed management plan development.

Address Tributary Stream Impairments

Conduct field assessments to refine particular sources of impairment and develop specific remedial strategies



An example of potential water quality impairments upstream of a monitoring site with high sediment loading. Recommend field assessment of upstream conditions to identify potential causes and remediation strategies.

Invasive Species Management

» Produce a management plan that identifies the location and extent of the most impactful invasive species in the Watershed, and prescribes methods and techniques designed to control those species

- » Cogongrass
- » Tallow tree
- » Chinese Privet
- » Japanese climbing fern
- » Giant salvinia
- » Feral hogs

Difficult to decide where to target invasive species management actions when problems are widespread – bang for the buck. Giant salvinia is an emerging issue while others have been known.

Invasive Species Management

» 54-acre cogongrass infestation at Blakeley State Park

» Cogongrass and tallowtree infestation along the Causeway

Improve Management of Protected and Conservation Concern Species

- Implement an Alabama red-bellied turtle monitoring program to include population and habitat surveys at 5-year intervals
- Resume large-scale marsh bird surveys in the lower Delta to track changes in breeding populations of Greatest Conservation Need species, including habitat assessment
- Raise public awareness to promote caution by boaters operating in West Indian manatee habitats, primarily through the installation of signage at key locations in the Watershed

Improve Management of Protected and Conservation Concern Species

» Conduct recurring surveys of habitat extent and quality and conduct geospatial analysis to map priority locations for conservation efforts

Improve Litter Cleanup Along the Bayway-Causeway Travel Corridor

- Improve trash collection through enhanced monitoring and more frequent cleanup
- Remove trash and derelict vessels from marshes and waterways along the Bayway-Causeway corridor
- Expand outreach efforts to educate the public about the litter problem and raise awareness about proper trash disposal, including signage placed in visible locations where trash accumulates

Improve Watershed Management

Watershed Management Plan Implementation Team

MTA Stakeholders
- » Federal Agencies
- » State Agencies
- » Counties
- » Municipalities
- » Industry
- » Citizen Groups
- » Non-profits
- » Tourism interests

Who can serve as a WMP champion and bring these groups together in a coordinated fashion, in a public-private partnership?

Possibilities:
- » Mobile Bay NEP
- » Dauphin Island Sea Lab
- » Partners for Environmental Progress
- » Alabama DCNR

Implementation will require a coordinated effort. With six HUC 12 watersheds there is a lot of area and different communities represented.

Improve Watershed Management

Inter-governmental Watershed Management

Enhance approaches to implementing comprehensive watershed management for:

- » Water Quality Monitoring
- » Land Acquisition
- » Protected Species Management
- » Invasive Species Management
- » Enhance Public Access

MTA Watershed Management Plan

Thank you!

Chris Warn with Environmental Science Associates provided an update on the Dauphin Island Watershed Management Plan

Key takeaways:

- The Dauphin Island Watershed Management Plan has been finalized.
    - Critical issues and areas and management implementation strategies are highlighted.
    - This watershed management plan is unique in that Dauphin Island has many initiatives for restoration, resilience, and economic sustainability already funded and/or in process.

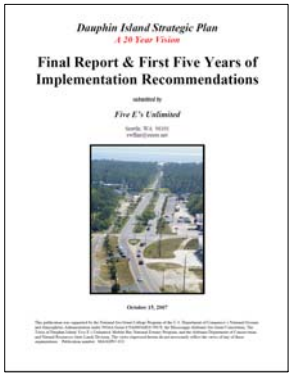
Build on Existing Efforts

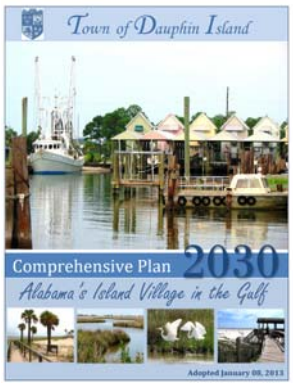
- Recently Completed, Ongoing, Planned, and Proposed Projects (~50)

https://www.mobilebaynep.com/watersheds/dauphin-island-watershed

Plan development coincided with many ongoing projects in some phase of design, construction, completion.

Build on Existing Efforts





Objective is to continue to build on existing efforts and have continuity in the WMP. The island has completed several strategic plans as well as the U.S. Army Corps barrier island assessment.

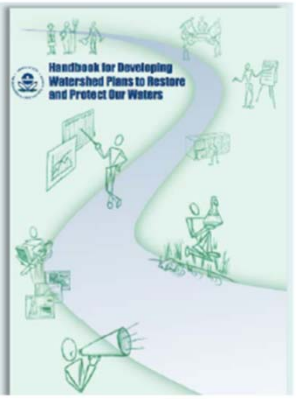
The Methodology – Watershed Management Approach

1. **Build Partnerships**
   Identify key stakeholders and solicit community input and concerns. Promote community involvement and engagement (5).

2. **Characterize the Watershed**
   Create a natural and cultural resource inventory. Identify causes and sources of impairments, data gaps, and estimate pollutant loads (1).

3. **Set Goals and Identify Solutions**
   Determine pollutants or other critical areas of concern, establish acceptable thresholds, and identify management measures necessary to achieve goals (2-3).

4. **Design an Implementation Program**
   Generate an implementation schedule with interim milestones. Identify criteria to measure progress and include a monitoring component, information/education program, and identification of technical and financial assistance needed to implement the plan (4-9).



Source: EPA.gov

Public Outreach & Stakeholder Engagement

- Outreach conducted over 6-year period
- In person and virtual
  - Public open house, steering committee, small group, and individual meetings
  - Online and in-person polls and surveys
  - Social media and Town Crier posts
  - AL Deep Sea Fishing Rodeo engagement
  - Multimedia (e.g., video, websites)
  - Participation in outreach activities for other projects occurring in the Watershed

Six common values most important to those living in Coastal Alabama

Access: To the water and open spaces for recreation and vistas.

Beaches and Shorelines: Protection, economy, beauty.

Fish and Wildlife: Habitats, abundance, livelihoods.

Heritage and Culture: Promoting our area's historic identity and protecting this legacy for future generations.

Resilience: Protecting the capacity of human and natural physical systems to rebound from unforeseen events.

Water Quality: Whether drinkable, fishable, or swimmable, the public places high value on quality rivers, creeks, and bays.

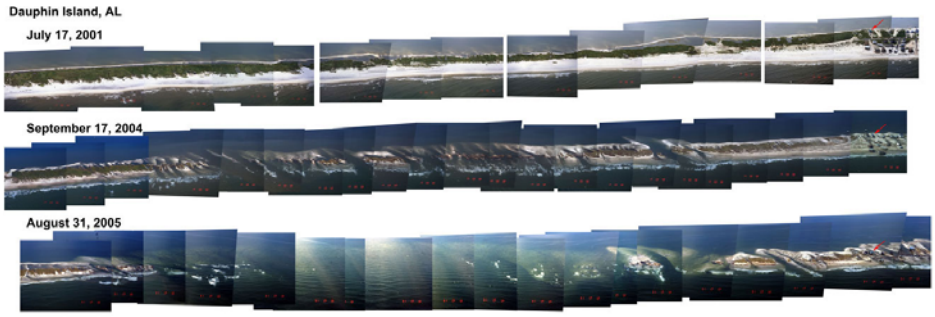
ESA

Critical Issues & Areas

- Water – Island-wide flooding
  - Low elevation, limited stormwater storage capacity, and drainage system
  - West End – storm events and rainfall
  - East End – rainfall and groundwater inundation

Critical Issues & Areas

- Coastlines – Erosion
  - Hurricanes, storm surge, SLR, gradual coastal processes, anthropogenic influences



SOURCE: USGS 2021

Breaching of Dauphin Island from Hurricanes Ivan and Katrina

Critical Issues & Areas

- Resilience
  - SLR, increased storm intensity and frequency

Hurricane Katrina, 2005
Source: National Weather Service

- Damaged or destroyed 450 of the 500 houses on the West End
- West End currently ~95% rentals

West End Overwash, May 2021
Source: MBNEP

ESA

Critical Issues & Areas

- Resilience
  - Federally declared disaster, FEMA covers 85% of the repair and cleanup costs
  - Non-federally declared storm events, Town carries 100% of the clean-up costs
    - 2021 event resulted in $2.5M in sand removal costs for the West End alone
    - Town annual budget~$4M

Critical Issues & Areas

- Fish & Wildlife – Habitat Loss
  - Pressure from development and natural phenomena
  - Loss of wetlands, dunes, and ecosystem services
- Access
  - Parking, transportation, boat ramps, beach access, dining options, lodging, tourism

Critical Issues & Areas

- Heritage and Culture – Pressure from tourism and population growth
  - 30% increase in population in past 10 years
    - 2019 ~1300
    - 2022 ~1800
  - ~60 new home/year
  - AL tourism almost doubled in past 10 years
    - Ranked in 4th place as most searched state on Google
  - Property not owned by island residents and not personal use
    - East End = 45%
    - Middle = 60%
    - West End = 47%
  - Almost 60% are rentals with island and non-island owners

Management Measures & Implementation Strategies

- Comprehensive stormwater management program
  - Homeowner education, low-impact development (LID), regulatory strengthening & enforcement, infrastructure upgrades and improvements
- Comprehensive beach and shoreline management program
  - Restore & enhance back-bay marshes, natural shoreline approaches, develop sand bypass system
- Strengthen community resilience
  - Policies, regulations, economic programs
- Land acquisition
  - Habitat preservation and conservation, floodwater storage, groundwater re-charge
- Wildlife, invasive species, & sand management
- Tourism management and more wheelchair accessible beaches
- Town Manager

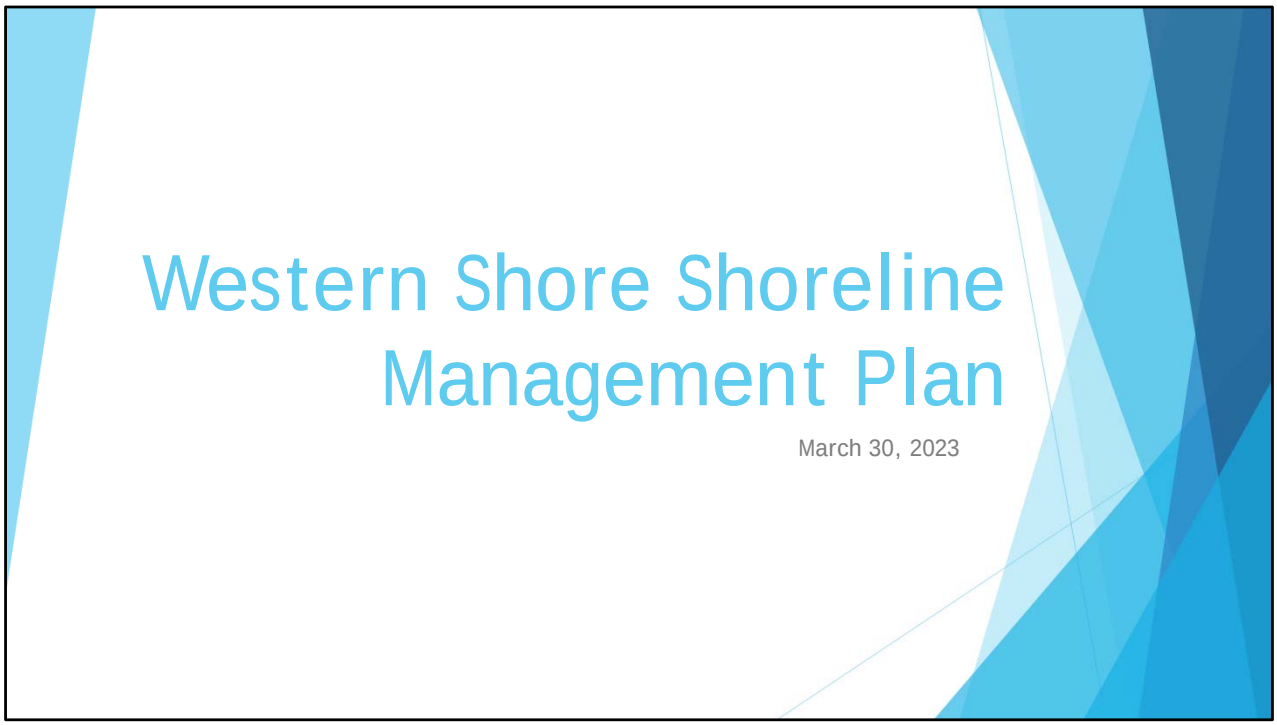
Create a Clean Water Future

ESA

Information

- Dauphin Island WMP Website:
  - https://www.mobilebaynep.com/watersheds/dauphin-island-watershed

cwarn@esassoc.com



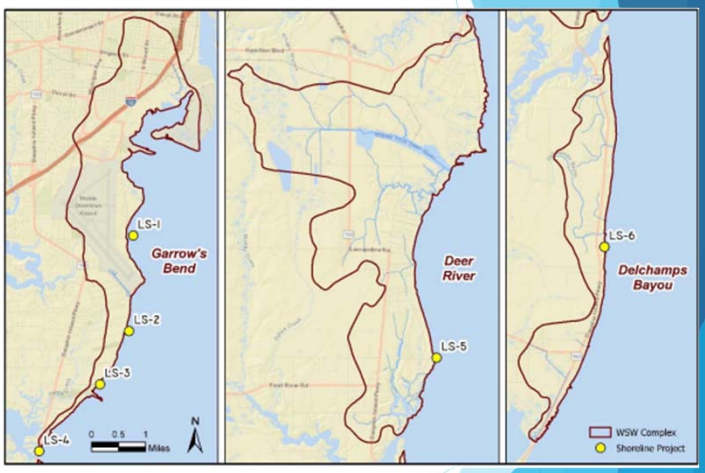
Jason Kudulis with the Mobile Bay National Estuary Program shared a presentation on the Lower Fish River Restoration Program.

Key takeaways:

- A priority recommendation of the WMP is to develop a shoreline management plan for the western shore of Mobile Bay.
    - MBNEP has secured funding from NFWF NCRF to develop a plan – the grant agreement is still in process so we will likely not be able to start until mid-summer.
    - A portion of additional funding from the Bipartisan Infrastructure Bill provided to all 28 NEPs will used to stand up a living shorelines cost-share program for the western shore.

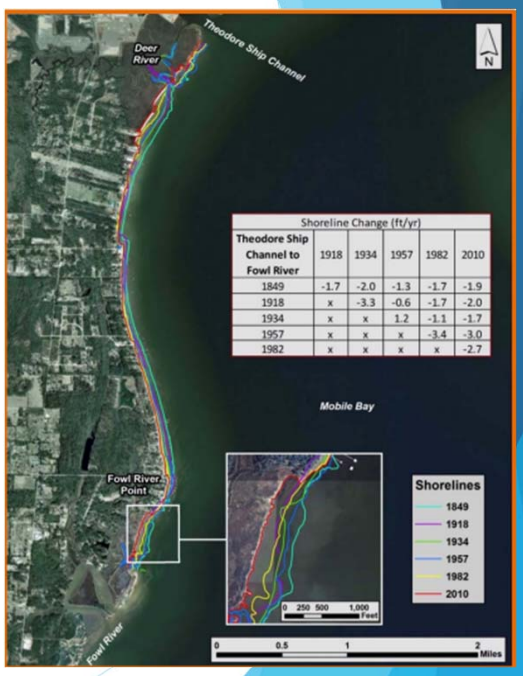
How We Got Here

- Western Shore WMP – high priority, shoreline plan considered fundamental to implementation.
  - Identified critical issues:
    - Coastal Erosion; Flooding and Sea Level Rise; Habitat Loss
  - Awarded $575k from National Coastal Resilience Fund
    - Will supplement with BIL funding



The Planning Process

- Stakeholder Engagement
  - Intergovernmental Working Group; Steering Committee; Landowner Engagement
- Literature/Regulatory Review
- Shoreline & Habitat Trend Analysis
- Wave Environment Analysis
- Management Measures to Implement Nature-based Solutions



Elements of a proposed shoreline plan Scope of Work.

Next Steps

Finalize funding agreement

Scope of Work and award project

Undertake development

Cost Share Program

Mr. Don Mrozcko with the U.S. Army Corps of Engineers presented on the Mobile District's regional sediment management program.

Key takeaways:

- The Corps is shifting its management of dredged material with an emphasis to identify opportunities to supply beneficially sourced material, keeping it in the system and out of upland disposal.
    - Capacity at the Blakely Island site is limited and will run out in the coming decades.
    - Looking for potential beneficial use opportunities for wetland/marsh sites.
    - If you have a project that could use and benefit from the Corps' material please contact their Regional Sediment Management Team.

Acknowledgments

- **ERDC Staff:**
  Brandon Boyd, Earl Hayter, Jarrell Smith, Danielle Tarpley, Jacob Berkowitz and Candice Percy
- **Mobile District Staff:**
  Elizabeth S. Godsey, Don Mroczko, Herb Bullock, Mike FitzHarris and Richard Allen
- **Stakeholders/Partners:**
  Alabama Port Authority, Mobile Bay NEP, ADEM, ADCNR, Nature Conservancy and more……..

USACE Regional Sediment Management Program

National RSM Program
Dave Perkey, Program Manager
Tate McAlpin, Deputy Program Manager

Regional RSM Center of Expertise
Laurel Reichold, Program Manager
Matt Shrader, Planning Deputy

Mobile District Leads
Don Mroczko, Planning Lead
Herb Bullock, Operation Lead
Elizabeth Godsey, Engineering Lead

ERDC

US Army Corps of Engineers
Mobile District

RSM is a systems approach using best management practices for more efficient and effective use of sediments in coastal, estuarine, and inland environments = Healthy Systems.

Study Overview

- Collaborative effort between Mobile District, ERDC and Regional Stakeholders
- Funded by the FY20 and FY21 RSM National Program to develop the framework to implement beneficial use of dredge material for wetland and delta system resiliency.

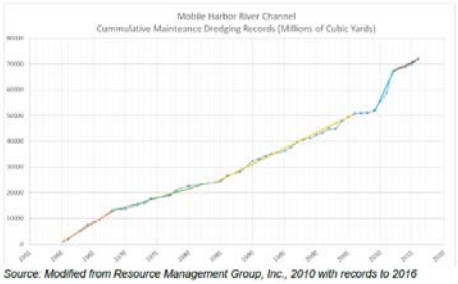
Scope:

Evaluate **cost effective** and **sustainable** beneficial use options that promote resiliency. Data collection and model tool development to assess the current and future states of marsh and sand transport in the system nearby to Mobile Harbor upland dredge material placement sites.

US Army Corps of Engineers ®

U.S.ARMY

A Two-fold Need



Source: Modified from Resource Management Group, Inc., 2010 with records to 2016

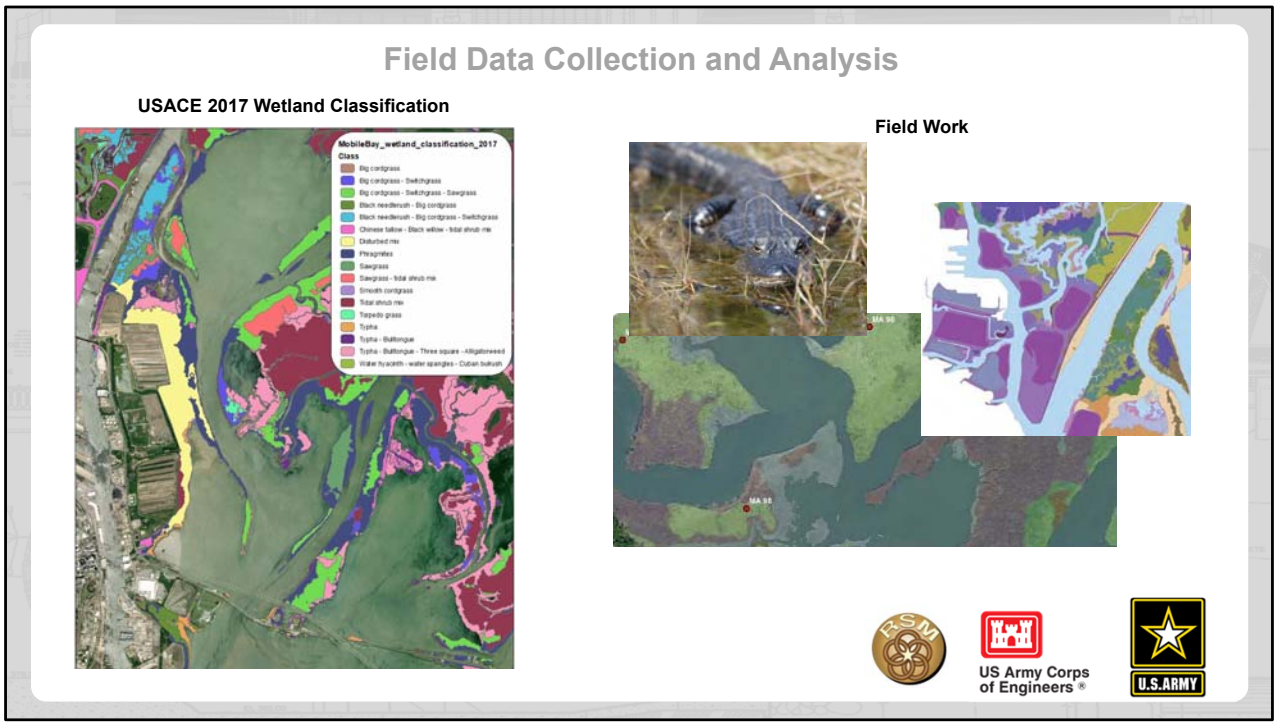
	Area (Acres)[1]	Projected Maximum Dike Elevation (ft)[1]	Total Idealized Volumetric Capacity (CY)[1,2]
North Blakeley	69	50	3,172,000
Mud Lake 6	70	46	3,388,000
Mud Lake 7	129	46	8,562,000
South Blakeley	196	65	12,087,000
North Pinto	48	47	3,434,000
Totals	512		30,644,000
20 year Project Capacity Needs of River Channel (1.3 mcy/year)			26,247,000
Remaining Capacity After 20 Years			4,396,000

1) Taken from Table 7 of Resource Management Group, Inc., 2010 updated with USACE dredge material placement records through 2016.
2) Idealized volumetric capacity includes interior capacity plus the volume to build projected maximum dike height cross-sections minus the volume in the spur dikes.

Source: Modified from Resource Management Group, Inc., 2010.

Upland disposal at Blakely Island is finite. With an average 1.3 mcy/yr of dredged material coming from the river finding viable beneficial use opportunities today that provides cost effective means to maintain capacity within existing sites is critical to the mission. In addition, regional research indicates that in the northern gulf of Mexico marshes within in Grand Bay, Weeks Bay and Apalachicola Bay, Pascagoula River and along Dauphin Island are at increased risk under projected rates of sea level rise and may be unable to keep pace.

A 2020 South Atlantic Division Regional Sediment Management Optimization Update highlighted that 42% of the dredged material from the Mobile Harbor Federal Navigation Project (MHNP) is managed by regional sediment management (RSM) strategies and brings a conservative annual average value of over $13.2 million to the nation. Given the interest of the USACE to integrate regional sediment management (RSM) strategies as well as incorporate natural and nature-based solutions for coastal storm risk management, potential for widespread adoption of beneficial use practices under the USACE priority objective of the 70/30 split to provide sediment sources that may help restore wetlands in degraded systems from developmental and climate related stressors (Craft et al. 2009) as a part of a RSM strategy exists.

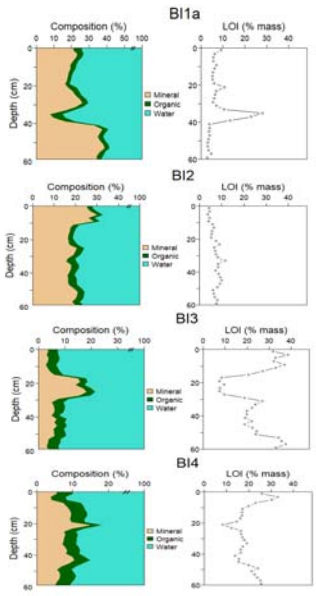


Leveraging past Corps' data and tools from the Mobile Harbor General Reevaluation Study, including completed field data collection in the delta (flow, suspended sediment fluxes and wetland mapping). The marsh adjacent to Blakeley Island is about 1361 acres in area and ranges from low marsh to upland habitat. Vegetation surrounding the core sites includes typical high marsh species such (common reed), (switchgrass), (common cattail), and *Baccharis halimifolia* (eastern baccharis; Berkowitz et al. 2018).

A strategy could be to fill this area to elevations that allow for a mosaic of habitats from Tidal Shrubs Mix down to Sawgrass to Bigcord Grass and Blackneedle Rush.

Field Data Collection and Analysis

Core Locations



Physical composition and LOI % of each core from 0 to 60 cm by 2 cm intervals

Field Work

US Army Corps of Engineers ®

U.S.ARMY

For assessment of marshes in the area as part of the RSM studies soil composition and elevations in the marsh and accretion rates (organic and inorganic) were collected .

Cores BI1a and BI2 cores were located in high marsh habitat while BI3 and BI4 were from low marsh habitat. Marsh equilibrium modeling input.

To assess marsh soil conditions and recent (decadal) sediment accumulation rates at the wetland adjacent to the Blakeley Island, sediment cores were collected with piston coring from four areas in the marsh of varying elevation and vegetation diversity.
Cores were processed to measure mineral and organic matter
via loss-on-ignition (LOI) and gamma spectroscopy to measure organic matter

Field Data Collection and Analysis

Geotechnical Grab Samples

Summary of Material Properties

Sample Location	Hole Number	No 200 (%)	D50 (mm)	Visual Shell Content (%)	D2487 Unified Soil Classification System	Wet Colors	Dry Colors Before Washing	Dry Colors After Washing on No. 230
Mobile River Upland Disposal Area	MRUDA-1	5.8	0.25	0.4	Poorly Graded Silty Sand (SP-SM).	10YR/ Brown 5/3; 2.5Y/ Dark Gray 4/1	10YR/ Pale Brown 6/3; 2.5Y/ White 8/1	10YR/ VeryPale Brown 8/2
Mobile River Upland Disposal Area	MRUDA-2	1.2	0.28	0.19	Poorly Graded Sand (SP).	10YR/ Pale Brown 6/3	10YR/ Very Pale Brown 7/3	10YR/ Light Gray 7/2
Mobile River Upland Disposal Area	MRUDA-3	0.7	0.30	0.03	Poorly Graded Sand (SP).	10YR/ Pale Brown 6/3	10YR/ Very Pale Brown 7/3	10YR/ Very Pale Brown 8/2
Mobile River Upland Disposal Area	MRUDA-4	7.6	0.24	0	Poorly Graded Silty Sand (SP-SM).	10YR/ Brown 4/3; 2.5Y/ Gray 6/1	10YR/ Light Yellowish Brown 6/4; 2.5Y/ White 8/1	10YR/ Very Pale Brown 8/2
Mobile River Upland Disposal Area	MRUDA-5	23.2	0.15	0.01	Silty Sand (SM).	10YR/ Brown 4/3	10YR/ Brown 5/3	10YR/ Very Pale Brown 8/2
Mobile River Upland Disposal Area	MRUDA-6	8.7	0.25	0.05	Poorly Graded Silty Sand (SP-SM).	10YR/ Brown 5/3	10YR/ Pale Brown 6/3	10YR/ Very Pale Brown 8/2
Mobile River Upland Disposal Area	MRUDA-7	2	0.33	0.47	Poorly Graded Sand (SP).	10YR/ Brown 5/3	10YR/ Pale Brown 6/3	10YR/ Very Pale Brown 8/2

US Army Corps of Engineers ®

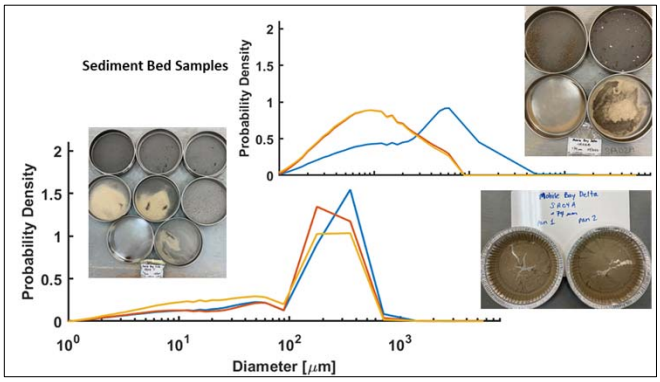
U.S.ARMY

Geotechnical sampling of the dredge material was conducted.

Field Data Collection and Analysis

Sediment Bed Samples

Sediment Characteristics



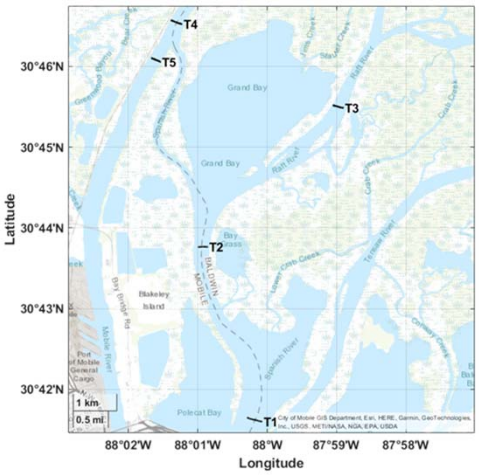
US Army Corps of Engineers ®

U.S.ARMY

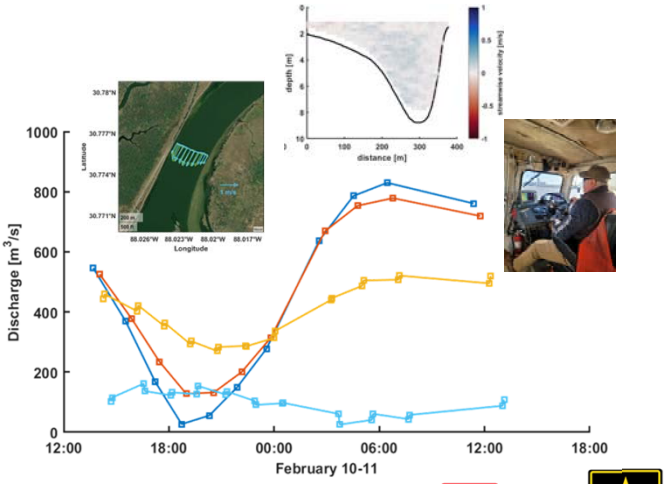
Existing bed grab sediment samples were collected and analyzed for the Spanish and Raft rivers. Used in sediment transport modeling.

Field Data Collection and Analysis

Flow Discharge Measurement



Flow Exchange



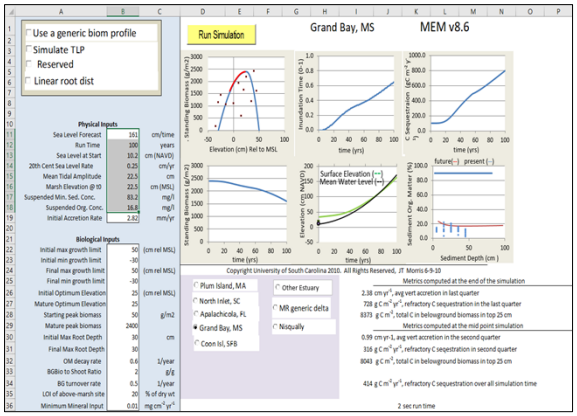
US Army Corps of Engineers ®

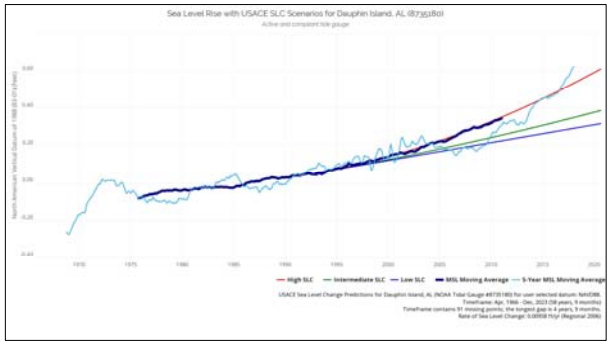
U.S.ARMY

Discharge measures and flow exchange was collected and analyzed for the Spanish and Raft rivers. Used in the sediment transport.

Model Evaluation and Future Marsh Conditions

Marsh Equilibrium Model Interface





Values for input variables used in MEM. Low, medium, and high values were determined based on the literature to capture a variety of potential scenarios.

Rate	SLR (cm/century)	SSC (mg/L)	Marsh Elevation (cm MSL)	Placement
Low	30	23.8	-5	15 cm every 10 years
Med	61	47.5	8	NA
High	161	95	50	30 cm every 20 years
Source	USACE 2017	Ramirez et al. In Review	Morris et al., unpublished data, 2016	

Marsh Equilibrium Model (MEM) is a 1-D numerical model used to predict coastal marsh elevation given mineral and organic contributions in different sea level rise scenarios (Morris et al. 2002).

Results from model initialization of MEM scenarios were compared to data from sediment cores collected on site for optimization and to assess applicability. When initial marsh elevation was at or above mean higher high water (MHHW), soil organic matter reached an equilibrium near 90%, much higher than observed conditions. At elevations near MLW or MSL, accuracy of modeled organic matter improved. scenarios with high SSC and low initial marsh elevation were similar to observations.

Vegetative growth is dependent on elevation relative to mean sea level (MSL) with peak growth occurring at a site-specific optimal elevation between MSL and mean higher high water (MHHW). At too low or too high of an elevation, primary production is limited by hypoxia and osmotic stress, respectively, and growth declines. Below MSL, a marsh can be considered unstable as inundation may cause reduced growth and sediment accumulation, resulting in transition to a subtidal environment.

Marsh Thin Layer Placement Options

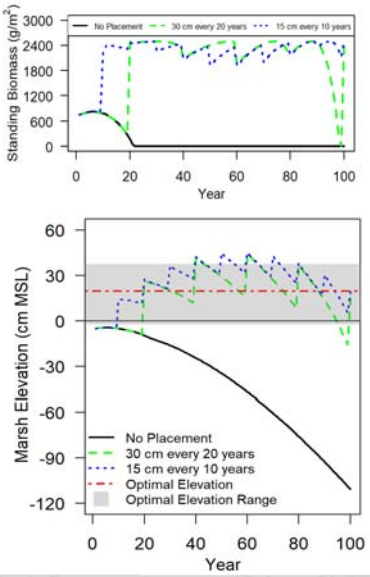
Two distinct TLP strategies to restore elevation were simulated. The two scenarios placed 15 cm every ten years and 30 cm every 20 years.

Analysis applied the most extreme elevation deficit (high SLR, low SSC, low initial marsh elevation) to determine maximum placement capacity and develop a conservative BU estimate

The two placement scenarios developed belowground biomass through high vegetative productivity.

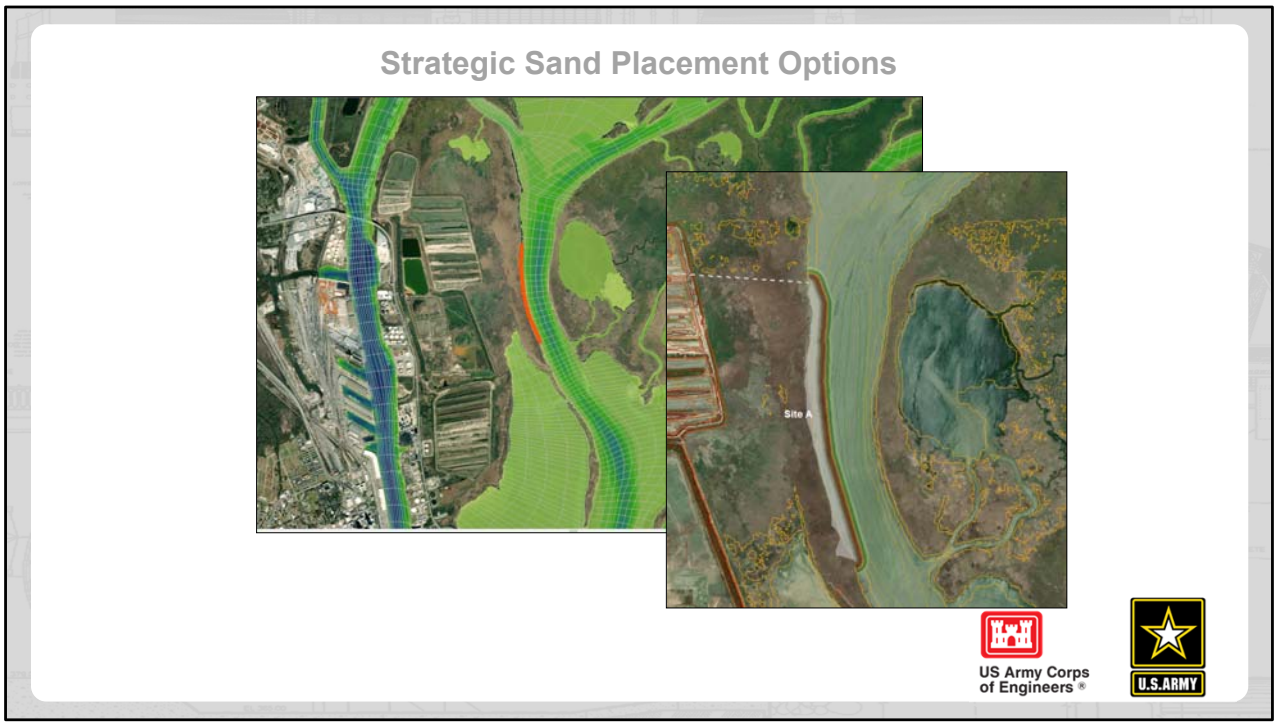
Placement strategies increased marsh elevation to an elevation near optimal for vegetative productivity for most of the model timespan.

In each placement scenario marsh elevation was outside of the optimal range at some point, indicating that an adaptive placement strategy would be required.

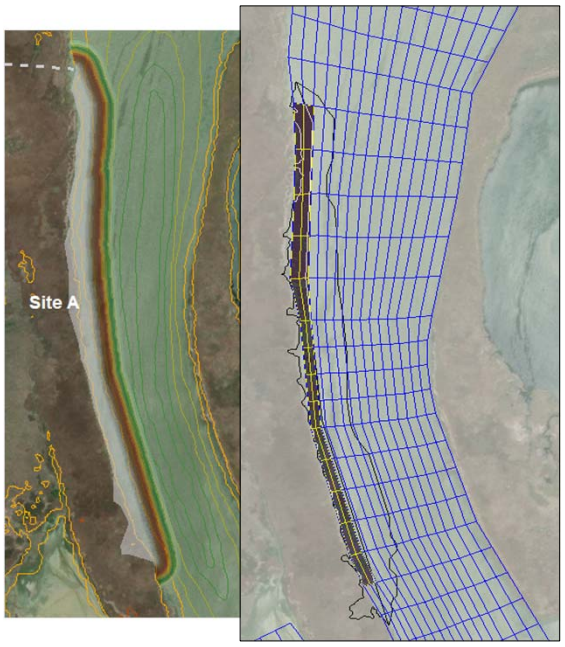


Considering logistical and economic costs and economic and ecological benefits. Both scenarios place 150 cm of material over 100 years at different placement frequencies.

Without placement, marsh elevation quickly dropped below the minimum growth limit (-10 cm MSL), limiting accretion of organic matter and suspended sediment. Marsh elevation in this scenario continued to fall at about the rate of sea level rise once the marsh collapsed.

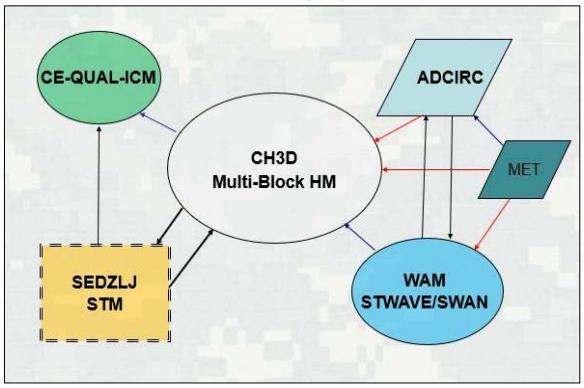


Examined max and a min on the volumes of 375,000 to 480,000 cy of sand placed along the riverbank just south of where the Raft and Spanish River join, which is southeast of the upland disposal site. Likely to target about 4,000 to 5,000 feet of bank placement. With the existing depths in the area and likely target fill elevation the placement width could be around 300 to 400 ft wide.



Sediment Transport Modeling

GSMB - Multi-Block Geophysical Scale Hydrodynamic, Sediment and Water Quality Transport Modeling System.



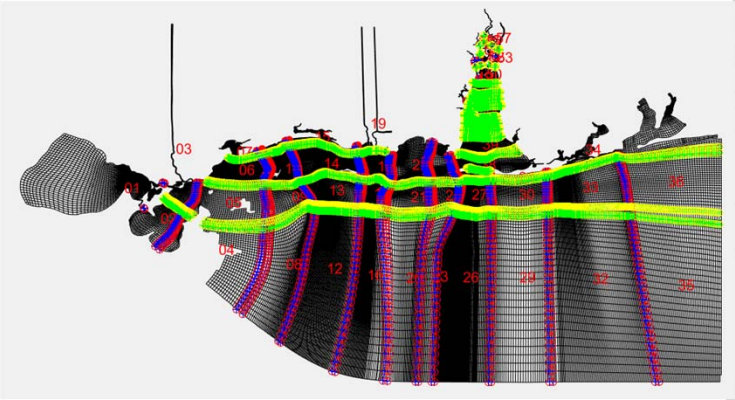
US Army Corps of Engineers ®

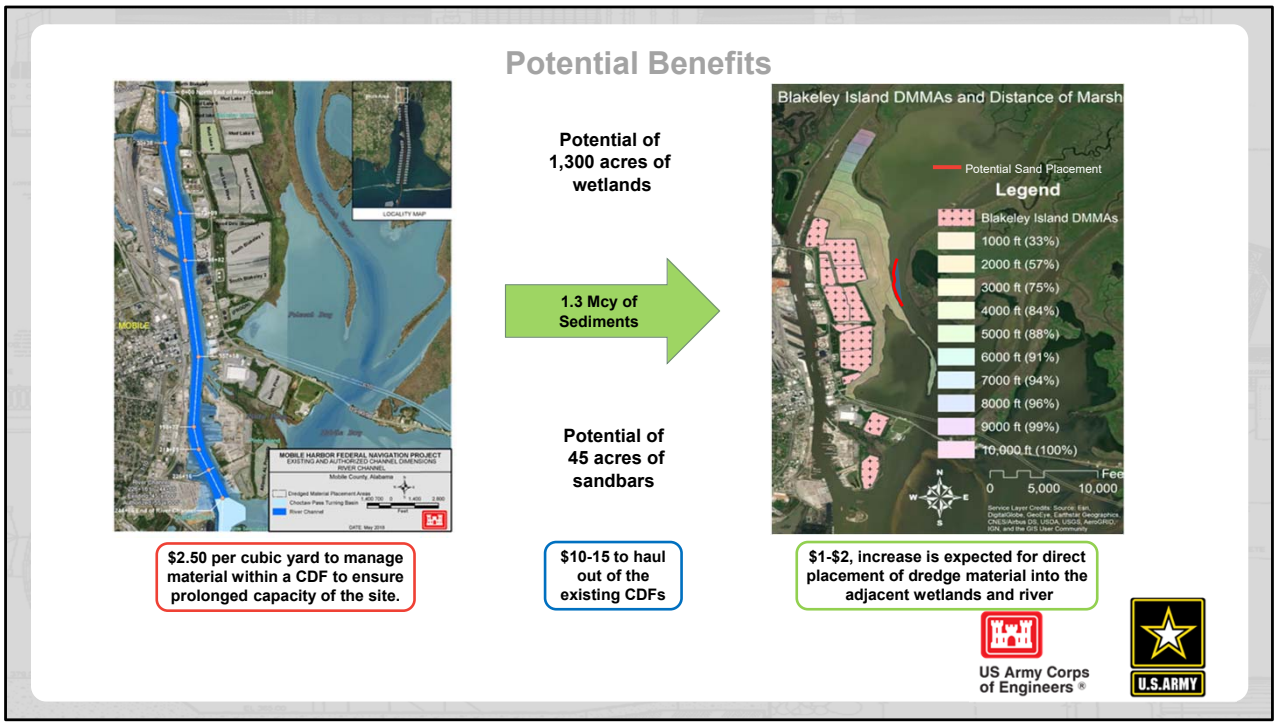
U.S.ARMY

Sediment Transport Modeling with GSMB

3D Hydrodynamic, Salinity, and Sediment Transport Modeling of 2010 forcings using 59 grid blocks and 10 sigma layers.

- Forcings: Tides, Inflows from rivers, Spatially varying winds and atmospheric pressures, and Riverine sediment loads.
- Sediment Transport: 5 size classes of native sediment (2 cohesive and 3 noncohesive), and 3 size classes of noncohesive sediment to represent the placed fill.
- Model simulates bedload and suspended transport of all 8-sediment size classes and change in bottom elevation in each grid cell due to erosion and deposition.
- The fate of the three fill size classes is tracked using the multi-layer bed model in the sediment transport model that accounts for the varying percentage of each of the 8 size classes in each of the 5 bed layers



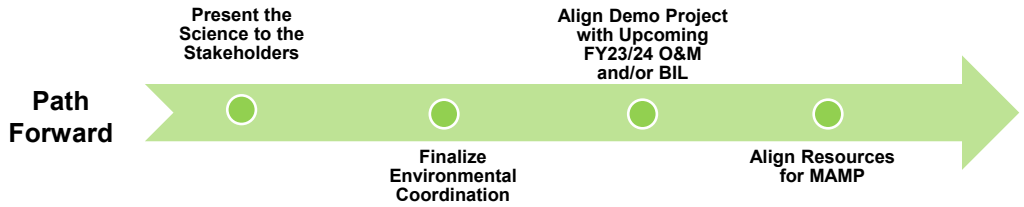


Cost of placement is dependent on equipment and method utilized for marsh nourishment. As shown in the figure on the left, over half of the marsh area (57%) is within 2,000 feet of a CDF and the bulk of the marsh area (84%) is within 4,000 feet.

Based on previous experience of operations associated with the sediment removal/haul-out process, it is estimated to cost approximately $2.50 per cubic yard to manage material within a CDF to ensure prolonged capacity of the site. A minimum cost increase, estimated to be $1-$2, is expected to be incurred by bypassing the CDF and directly placing dredge material into the wetlands. Despite the increase in cost, wetland nourishment is still viable option when compared to offshore haul-out of material which ranges from $10-$12 per cubic yard.

Status and Next Steps

- ❑ Complete evaluation of sediment transport in the system
- ❑ Identification of optimum placement locations
- ❑ Work with agencies to develop an Action Strategy for a potential demonstration project
- ❑ Work with agencies to develop and implement a Monitoring Plan



File Name

US Army Corps of Engineers ®

Historic Aerials

1952

1974

http://alabamamaps.ua.edu/aerials/Counties/Mobile/Mobile.html

US Army Corps of Engineers ®

U.S.ARMY

Let's Talk

Don Mroczko, Biologist / Project Manager
Phone: (251) 690-3185
Email: Donald.E.Mroczko@usace.army.mil

Project Implementation Committee Agenda

~~Welcome and Call to Order:~~
~~Co-Chairs: Judy Haner, The Nature Conservancy, & Patric Harper, U.S. Fish and Wildlife Service~~
~~**Review and approval of November 2022 minutes**~~

~~Old Business:~~
~~Management Conference Committee Updates~~

~~New Business:~~
- ~~Planning Activities and Updates~~
- **MBNEP Watershed Planning and Project Implementation Updates**
- **Next Meeting TBD**

The committee is still interested in off-cycle field trips. Hoping to get to the wild oyster harvest with MRD this fall. Anything before the summer heat begins is ideal.

Next meeting TBD. MBNEP will investigate best-practices to run hybrid meetings moving forward to better serve all parties interested in participating.

Motion to adjourn 3:20. Mary Kate made the motion, Lee Waters seconded.